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APRIL 1935 • REMODELING • PUBLICITY FOR ARCHITECTS • WATERPROOFING REFERENCE DATA

AMERICAN ARCHITECT

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IN THIS MONTH'S EDITORIAL SPOTLIGHT

REMODELING, MODERNIZATION, REPAIR . . . An active field of building that has recently become a fertile and lucrative one for architects because of recent Congressional action that raised to $50,000 the limit of loans, insurable under FHA terms, available to owners of commercial properties

PUBLICITY FOR ARCHITECTS . . . In the February issue, American Architect proposed a plan for nationally organized publicity as the key to better business. This month Harry A. Bruno, a public relations expert of national standing, discusses ways and means by which architects can sponsor an effective public relations campaign

WATERPROOFING . . . The seventeenth of American Architect's Reference Data Series. Facts, figures, charts, drawings—all have been used by Tyler Stewart Rogers to present the basic solutions to the architect's waterproofing problems. From footings to ridge waterproofing, methods are discussed from the same standpoint of unbiased authority that has made the Reference Data Series an acknowledged and invaluable guide to sound building practices

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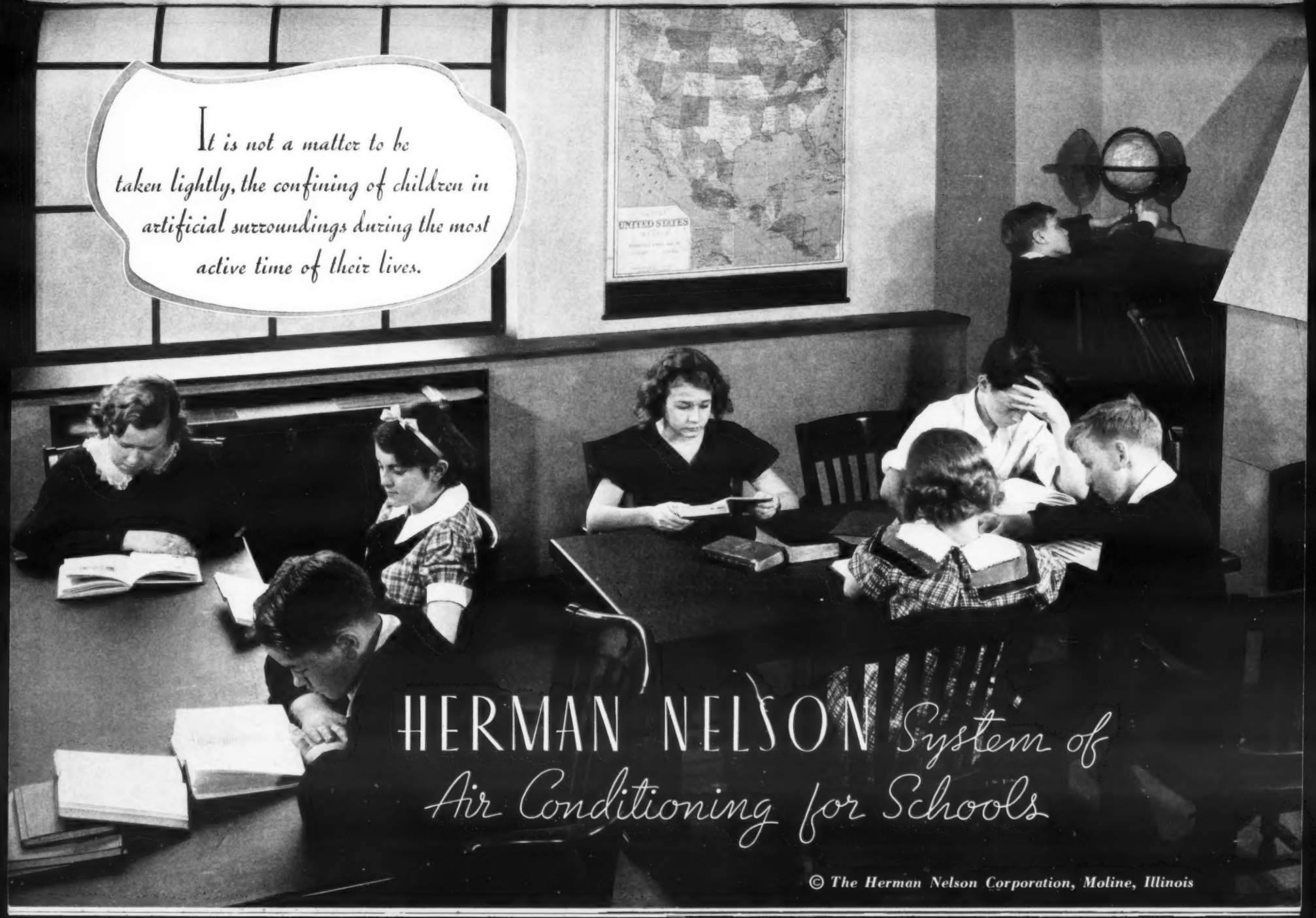
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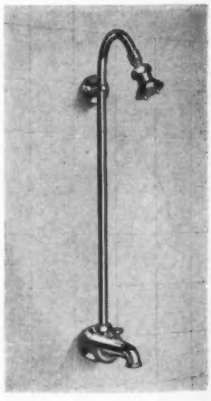

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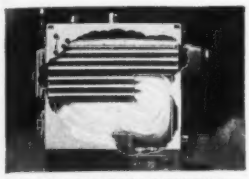

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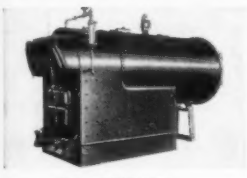

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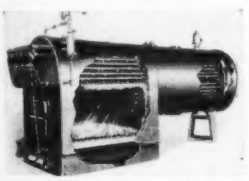

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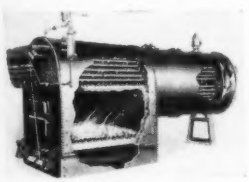

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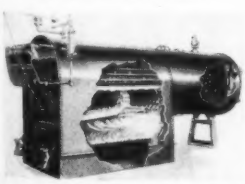

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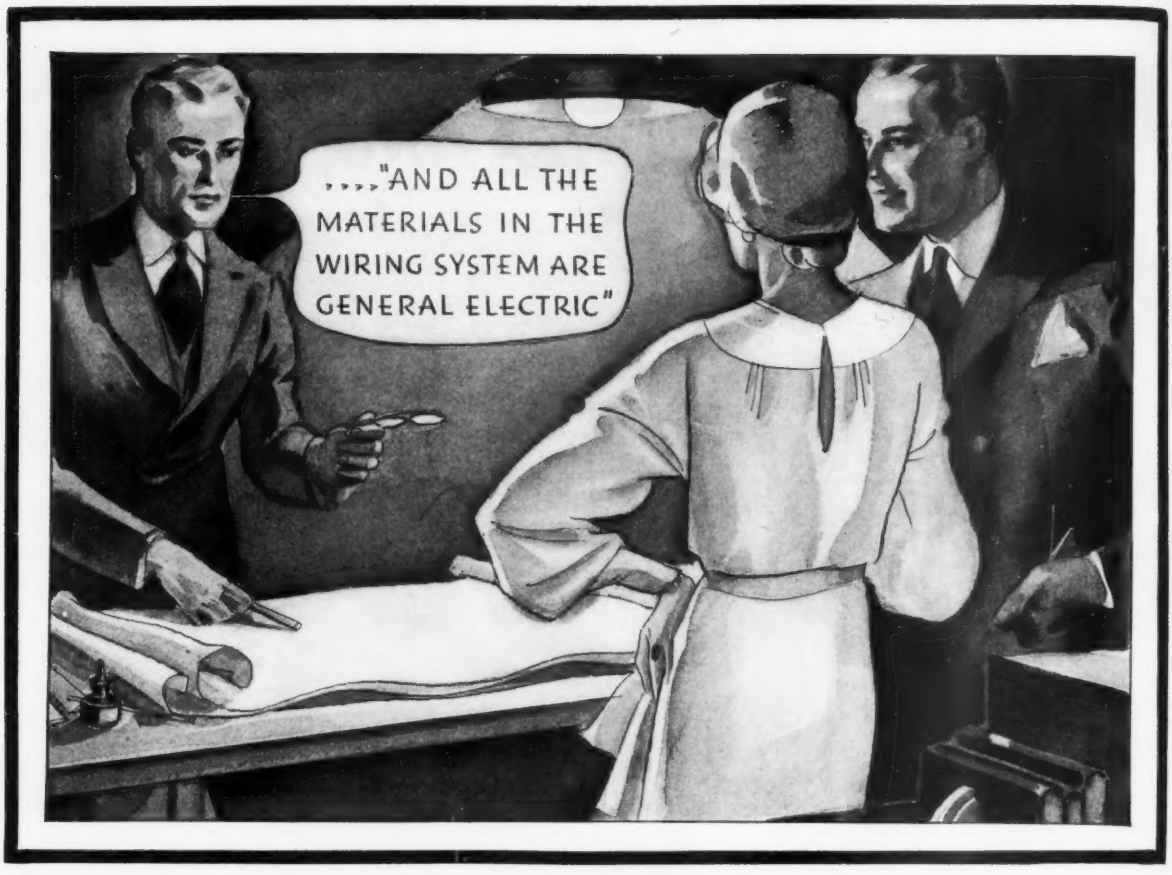

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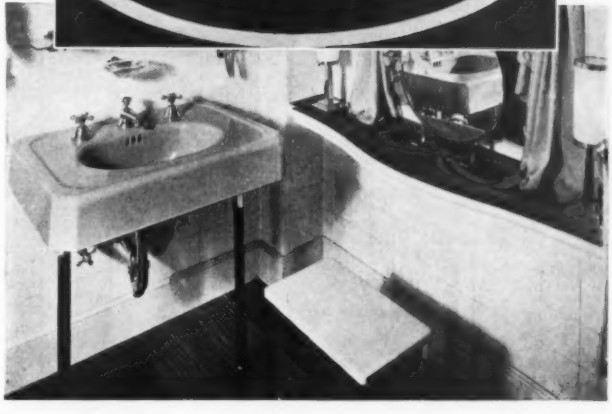

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Unity Is Strength

BY BENJAMIN F. BETTS, A.I.A.

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THE uniting of all architects in the United States in a single, compact organization is essential for the protection and future welfare of the profession. Failure of attempts to secure legislation, eliminate competition of Government bureaus, elevate professional standards and properly publicize the profession emphasizes the importance of strength of numbers and purpose.

The need for unification was recognized by the American Institute of Architects in 1932. At that time was formed a plan based upon membership in the Institute of state societies as units. After three years the plan has not progressed much beyond the state of being an idea. And no idea is better than its execution. It is questionable whether or not this plan can ever be entirely successful.

The Institute at present is not representative of the entire profession. Its membership includes about 3,000 active Fellows and Members—about thirty per cent of the practicing architects. The membership should represent more nearly eighty per cent. It should be an organization for the many—not for the few—if it is ever to be a powerful factor and influence in furthering the best interests of the profession and the public.

The Institute is the profession's only national organization. Expansion of its membership fully to represent the profession—without differing classifications—would merely be promoting its avowed objects: "To organize and unite in fellowship the architects of the United States of America, to combine their efforts so as to promote the esthetic, scientific and practical efficiency of the profession and to make the profession of ever-increasing service to society." These objectives can never be made a reality by a minority membership. The profession can never become a strong group without unity. The needs of the times can never be met without co-ordination of purpose and action.

Unification of the profession in fact and not in theory is the first vital step in attacking problems which confront the profession today. Action toward this end should be taken at the Institute Convention which will be held in Milwaukee next month.

XUM

Remodeling,

Modernization, Repair . . .

Alleyways of Buildings Become a Broad Highway

FROM FHA's Second Industrial Conference on the National Housing Act came a proposal that Congress amend the Act by increasing to $50,000 the former $2,000 limit on modernization loans insured by FHA. The House already has approved the change by a huge majority. The Senate, probably, will soon do likewise.

To all concerned with building this is news of encouraging significance. It means that from 12,691 approved financial institutions throughout the country owners of commercial buildings can borrow low-interest money for much-needed property improvements. It means also that architects will now have an equal chance with builders and building material manufacturers to advance their opportunities along the newest highway to building recovery.

Stimulus of the FHA Better Housing Campaign swelled the total of Remodeling, Modernization and Repair activities to nearly $300,000,000 in less than six months. Practically all that money was spent in the residential field. The amendment to the NHA applies to commercial structures, and estimates by B. J. Flynn, Director of the FHA Industries Division, place the extent of this activity at $2,000,000,000. A recent survey of the Division indicated that in the case of stores alone modernization was urgent in more than 750,000 cases.

Such estimates may prove to be pardonably optimistic. But they mirror the fact that the building industry is headed along a firm road to recovery. Remodeling, Modernization and Repair were once odd-job alleyways of building. Today they constitute a highway down which the individual architect can travel toward better business. With but $2,000 at his disposal, the average owner of a residence could do little more to his property than was barely essential to improve its appearance or equipment. With $50,000 the owner of a commercial structure can undertake a major operation. Work of this sort requires architectural services for its successful conclusion. And for many such projects architects will be retained if they will seriously challenge the bright promise of the building industry's immediate future.

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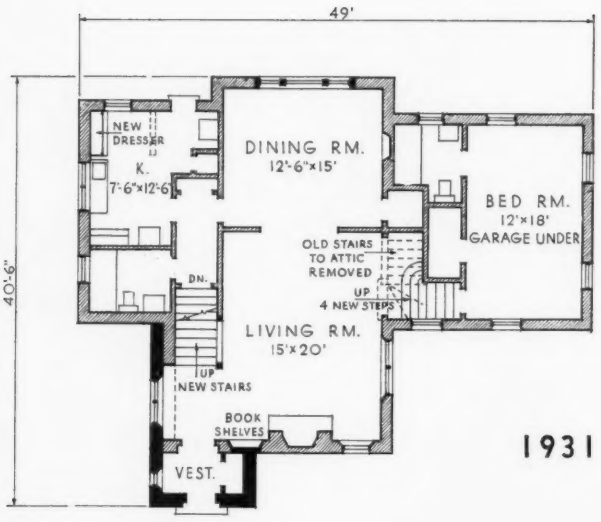
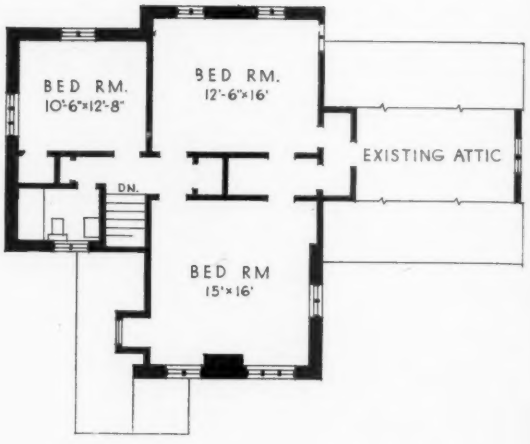
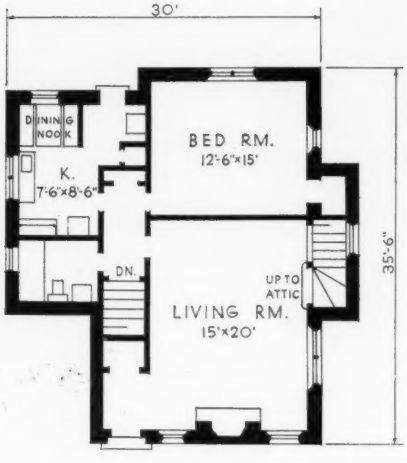
JAMES J. BEVAN, ARCHITECT

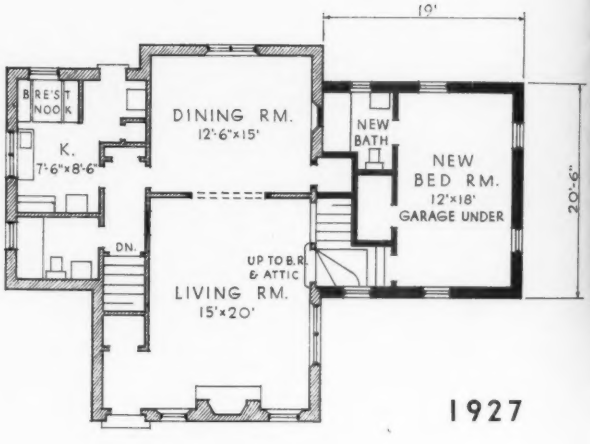
REMODELED HOUSE OF RICHARD BLACKWELL

RYE, NEW YORK









Progressive Remodeling to meet changing requirements. Walls of original house built in 1924 (right) were solid masonry of local stone set in forms and bonded with poured concrete. Additions were similar except on attic portions of latest alteration. Remodeling included new interior finishing, insulation of cork and balsam wool and a gas-fired steam heating plant. Changes in this house produced two results: vastly improved flexibility and value from the owner's standpoint and general improvement of the neighborhood. Surrounding empty houses were likewise remodeled by their owners and almost immediately thereafter were rented. On facing page: below, after new wing was added in 1927; above, after completion of final remodeling. On plans solid lines indicate new work on successive alterations

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HOUSE OF RICHARD BLACKWELL
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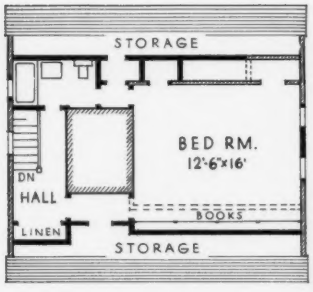
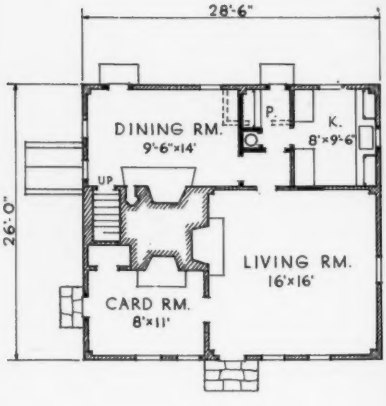
JAMES J. BEVAN, ARCHITECT

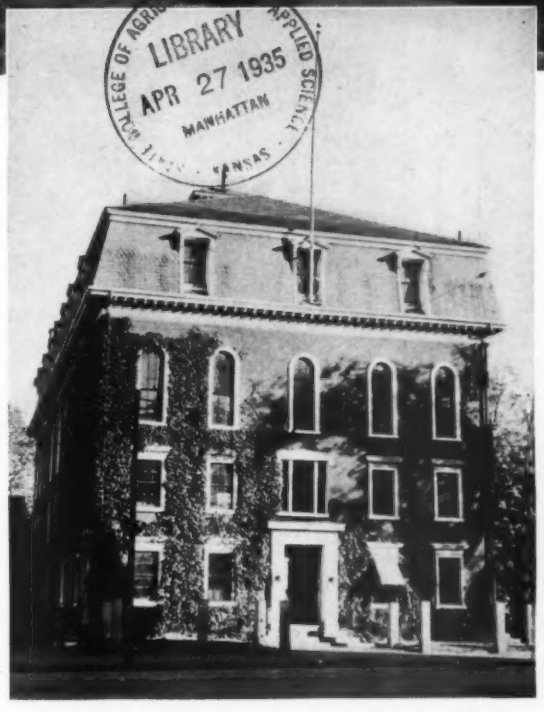




Modernization and Repair at a cost of $2,950—including the architect's fee—made a comfortable, attractive cottage from an old structure that dated to 1700. Heavy lines indicate new work on the plan

FRITZ STEFFENS, ARCHITECT

ALTERATIONS TO HOUSE OF OLIN C. POTTER
OLD LYME, CONNECTICUT



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Remodeling in this case restored the original character of an old building constructed in 1793 and altered twice since. The cost was $97,626. Above, as restored in 1933. Right, building before remodeling

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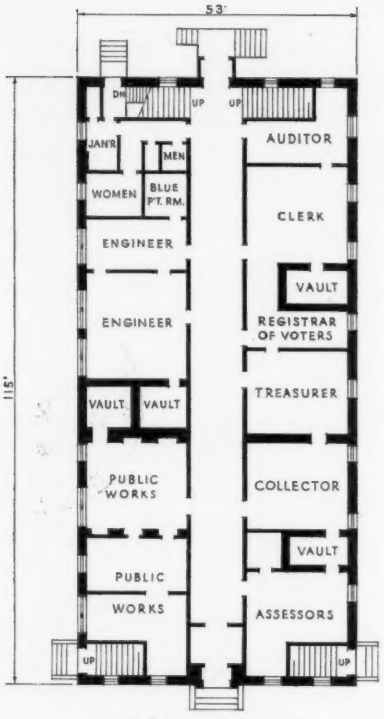
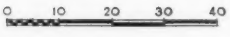
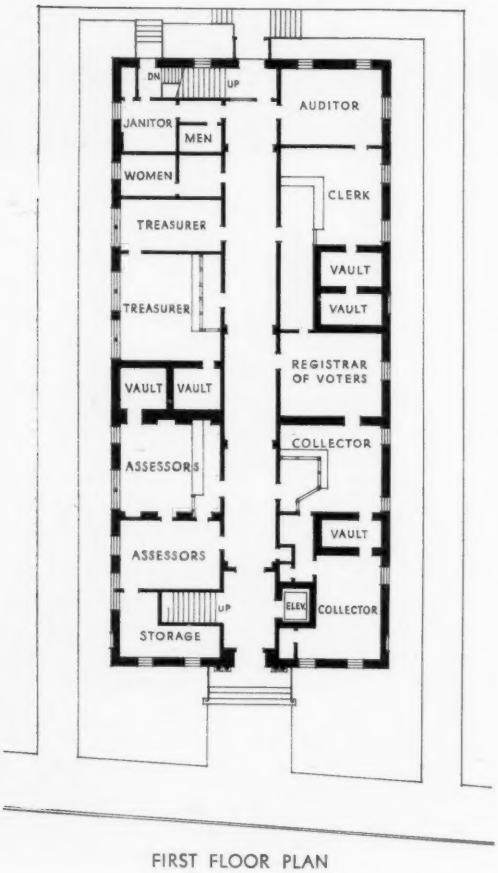
BEVERLY CITY HALL
BEVERLY, MASSACHUSETTS



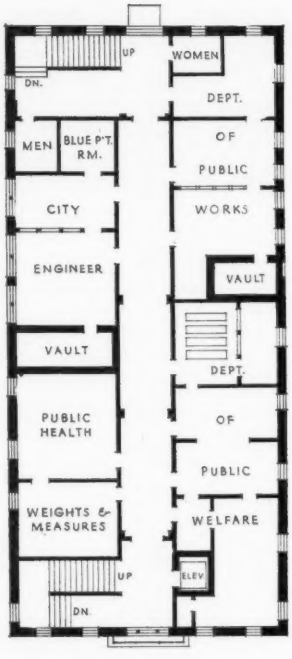
FIRST FLOOR PLAN

The Beverly City Hall was originally the private residence of a Revolutionary privateer. It had been an unusually fine example of colonial mansions of the time and showed the design influence of Samuel MacIntyre. After purchase by the town it was altered twice and the original character completely lost. The latest work was attempted to restore the feeling if not the form of the old house and at the same time to create a modern city hall in keeping with the architectural traditions of the locality. Left: plan of the building before the 1933 remodeling. Below: plans as altered. Gates & Standish, architects

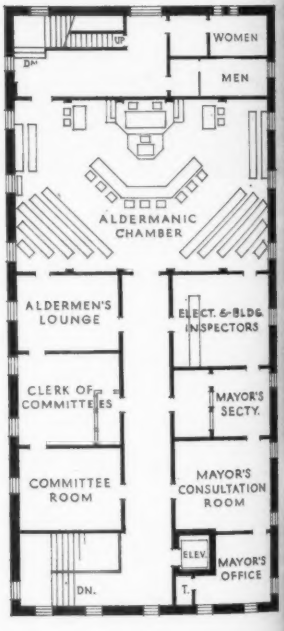




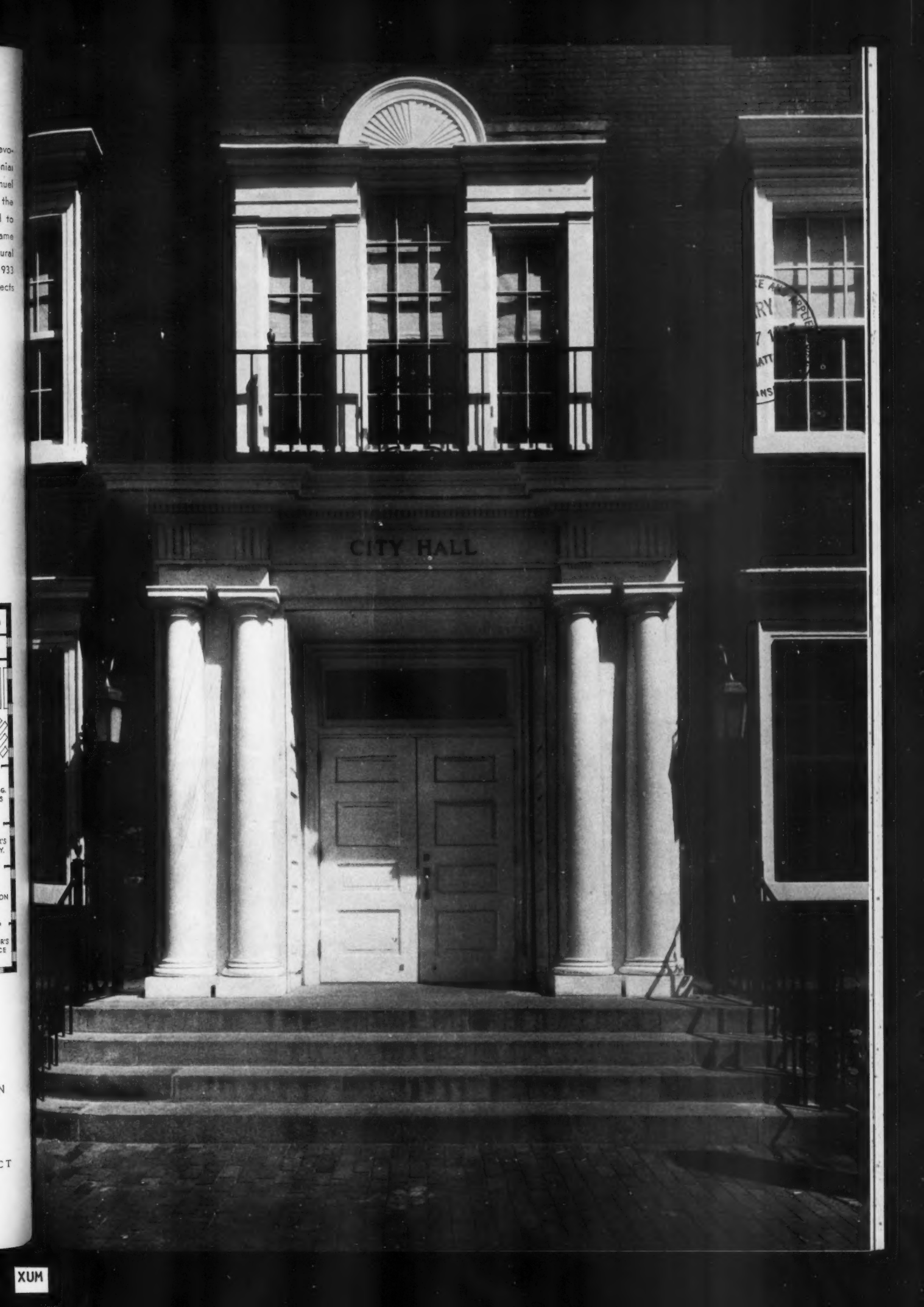
FIRST FLOOR PLAN



SECOND FLOOR PLAN



THIRD FLOOR PLAN


CITY HALL

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Modernization of this building consisted in removing original glazed brick, encasing the structure with pneumatically applied concrete and resurfacing with tan and buff terra cotta. This page: before and after pictures of the building. Facing page: detail of new entrance

EDWARD L. MAYBERRY, ARCHITECT AND ENGINEER
ALLISON AND ALLISON, CONSULTING ARCHITECTS

STORE BUILDING FOR THE J. W. ROBINSON CO.
LOS ANGELES, CALIFORNIA

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CHICAGO, ILLINOIS

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Modernization of this shoe store is typical of possibilities in nearly every city in the country. On the exterior (facing page) an obstructing column was removed from the entrance, show windows were enlarged, the facade faced with Vitrolite and trimmed with aluminum. On the interior the new floor is linoleum; walls and ceilings painted cement plaster; lighting fixtures chromium trimmed with black. Cases and furniture are walnut with chromium trim

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Modernization money for commercial interiors such as this will be available under the proposed amendment to liberalize FHA modernization credit terms. Right: tea room portion of the drug store below after application of brightly painted wallboard, minor repairs and installation of indirect lighting and new furniture. The color scheme is light lemon yellow and blue

HEDRICH-BLESSING

WALTER T. WILLIAMS, ARCHITECT

INTERIOR OF LIGGETT DRUG STORE
CHICAGO, ILLINOIS

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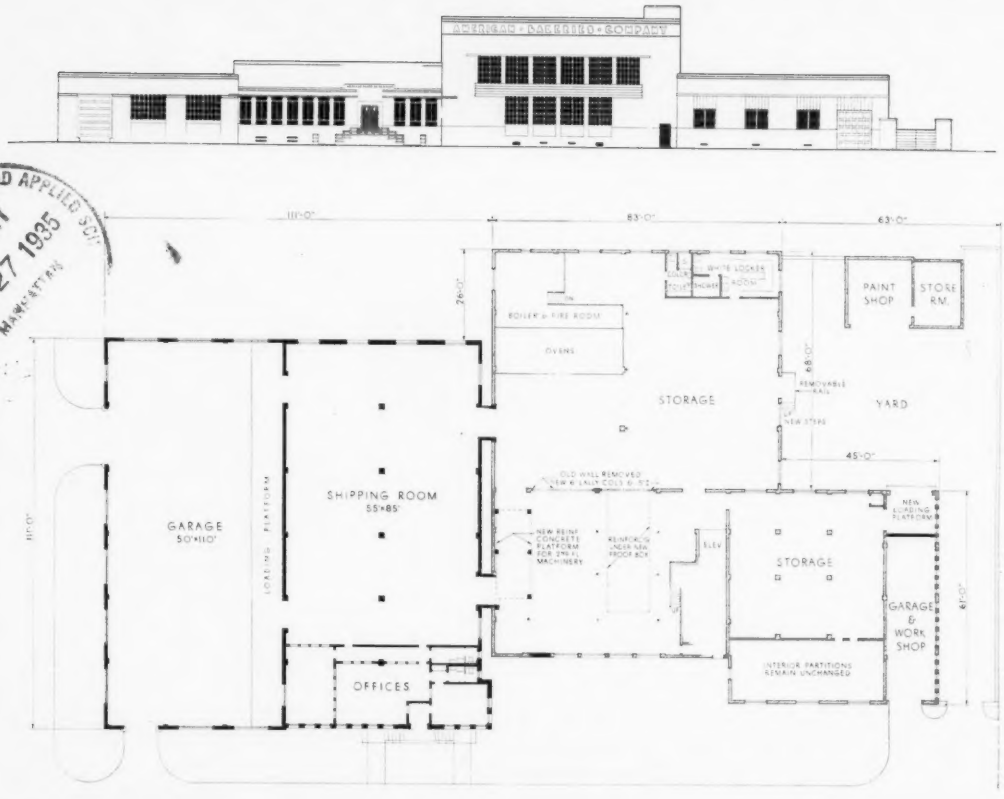
ROBERT LAW WEED, ARCHITECT

AMERICAN BAKERIES CO. BUILDING
MIAMI, FLORIDA



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Additions are shown as solid lines on the plan. The existing structure was modernized by changing fenestration and resurfacing facade to correspond with the character of new work. This type of commercial project is the sort that will mean business for architects as one result of increased limits of the FHA modernization credit plan

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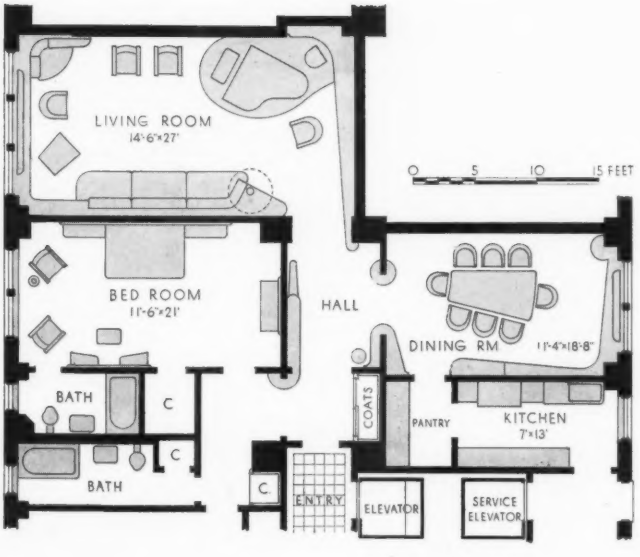

ABEL FAIDY, ARCHITECT

APARTMENT OF MISS IRMA GLEN
CHICAGO, ILLINOIS

Photographs by Hedrich-Blessing

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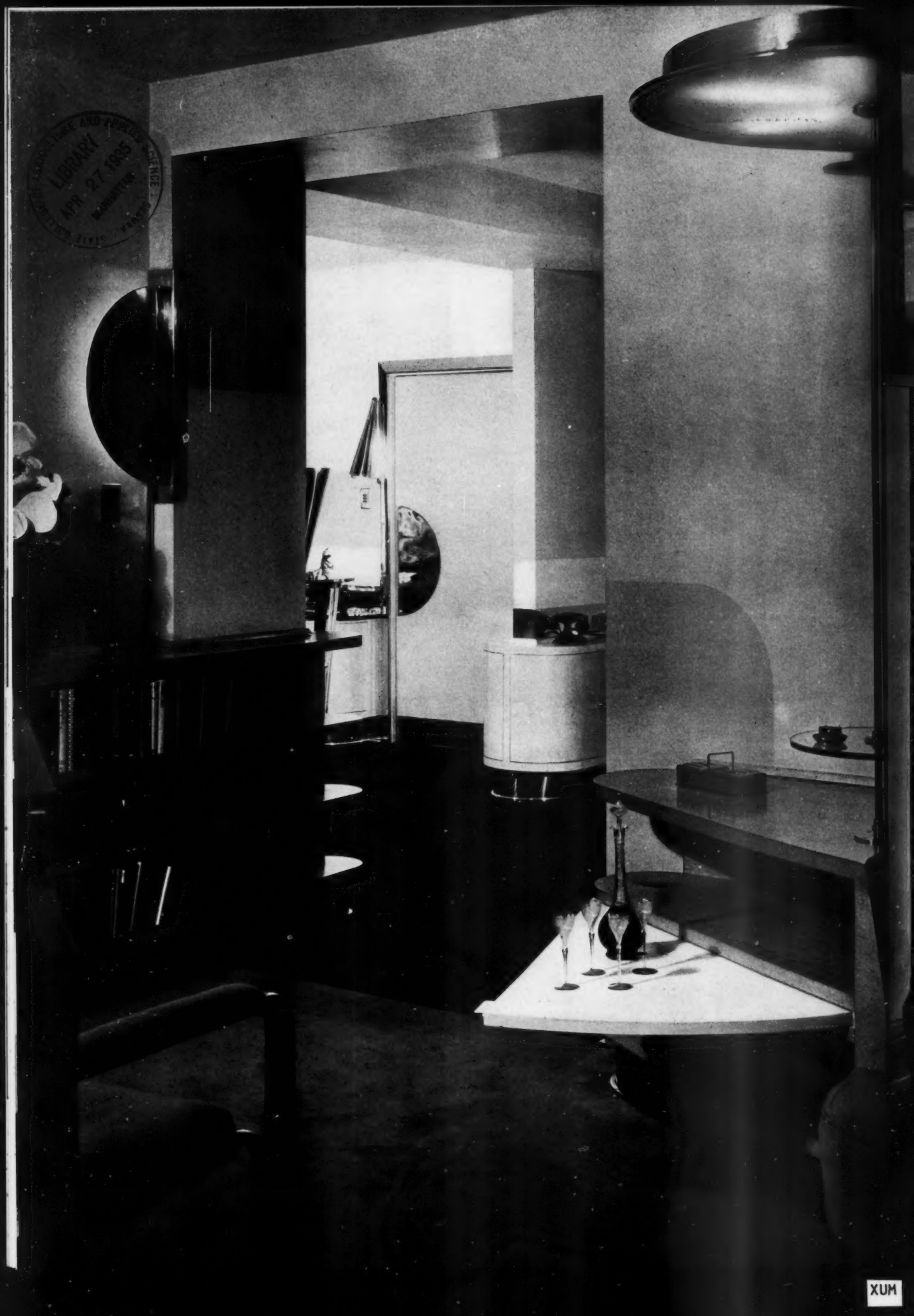

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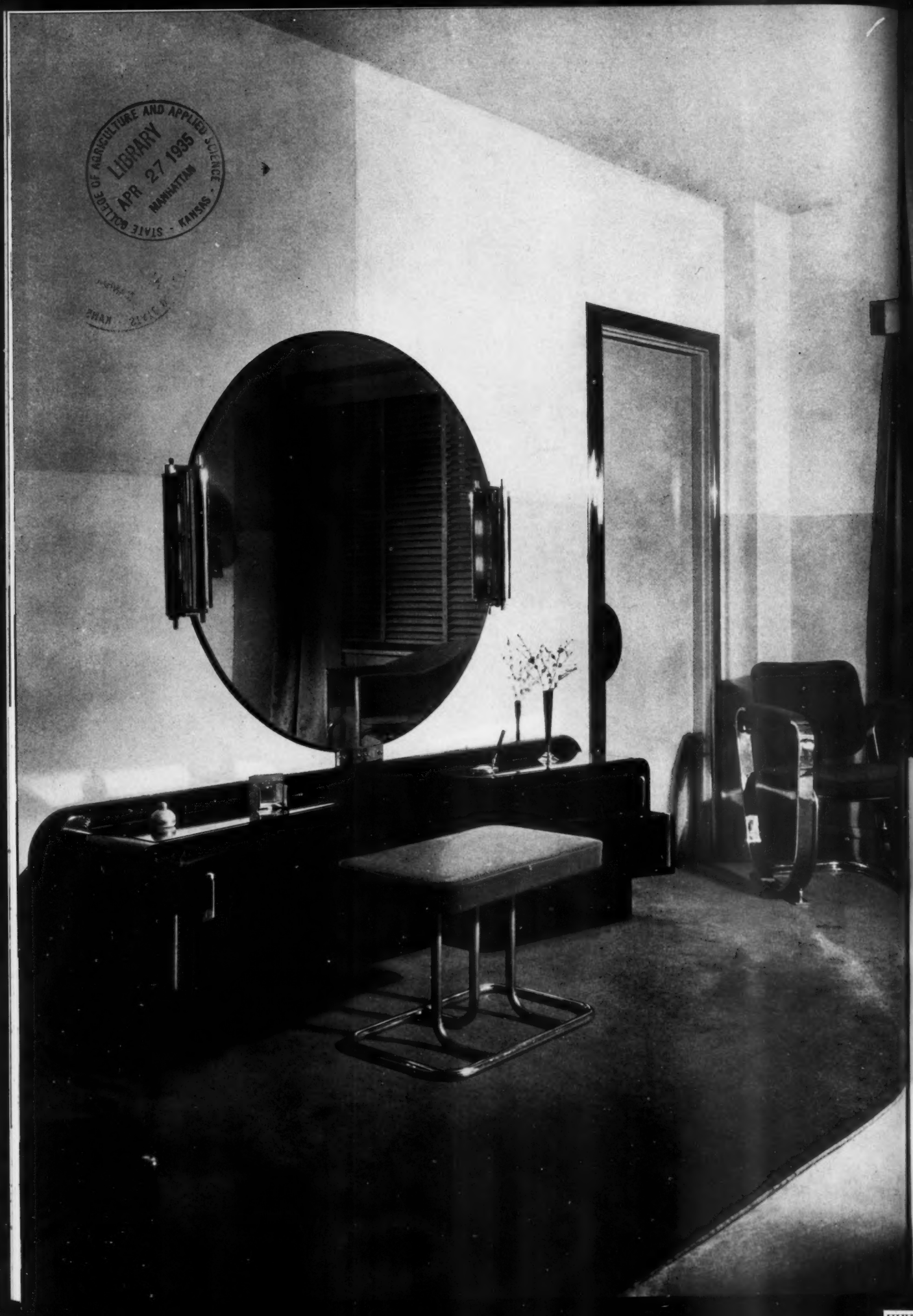

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Interior architecture is proving to be a growing modernization field for architects. On facing page and above: bedroom, with built-in furniture and a general color scheme of blue, gray, black and white. Right: dining room. Floor, black carpet; wall, gun metal mirror; metal work, chromium plated brass. Living room and hall, shown on three preceding pages have rust brown floor coverings. Living room walls are lilac gray, mirror is rose colored, furniture is upholstered in light tan. Walls in hall are separately painted white, gray, lemon yellow and vermilion

XUM

WIDE WORLD STUDIOS

A Publicity Expert Says:

Organize First . . .

BY HARRY A. BRUNO

Public Relations Counsel

THE entire public consciousness—in politics, finance, commerce and art—now is definitely directed toward what is commonly called a "new deal." This indicates the building of a new structure or a definite and sometimes radical rebuilding of the old. In such a program of change the architect can readily discover tangible relationships with his profession.

But what can he do to measure accurately the degree of public consciousness as to his position in the prevailing scheme of things?

The architect must make his place—or have it made for him—by putting himself before the public as a constructive, sound aide in the nation's social, structural and psychological rejuvenation.

Concretely, just how can that be done?

The architect must create (and it is his normal professional function to create) a strong reason why the general public will require and demand his services. He must take advantage of this national wave of "rebuilding consciousness." He must be presented to his public with the proper dignity yet with a most concrete, direct and sound message. Many reasons must be clearly shown why he should be retained on private and public enterprises. A definite demand for his services must be generated.

The matter of impressing upon the general public the utility value of the architect is an important phase of such a campaign. The nation should understand the value, the economy, and the basic necessity of an architect's technical skill and business experience in the building or rebuilding of any type of structure. It must be shown to the public that without the architect the success of any building enterprise is doubtful to a great degree. At present this knowledge is not general. Thus, it is not surprising that in the recent expenditure of Federal, State and municipal funds for rebuilding, the architectural profession was unable to seize the vast opportunities confronting it.

But action taken on behalf of the profession must be national and united. The profession must agree on its campaign, and then adhere to it for ultimate success. Only on such a basis could any organization expect to influence public opinion favorably.

Procedure on such a national campaign might be as follows:

1. The co-ordinating of existing local, State and National architectural groups in a meeting to determine definite policy.
2. Selection of acceptable trustees.
3. The raising of campaign funds by subscription of small sums, or "campaign memberships" from every architect.
4. Establishment of a national campaign headquarters.
5. Development of a national Bureau of Information, collection and exchange.
6. Selection of an adequate Public Relations Counsel to handle the campaign.
7. Arrangement of local or sectional outlets for the campaign, via individual architectural groups and organizations.

The matter of consistency and constant attack is one which is of importance in such a campaign for the architectural profession. The message of the

then Plan for Better Business

Public demand for architects' services is the key to better business for every member of the profession. It can be effectively stimulated if architects will unite in a nationally organized public relations campaign

architect should be driven home with unrelenting force, yet with sufficient subtlety to avoid offense. In this connection there should be considered the advantages of what can be called "tie-up" or co-operative activity with such allied industries or professional channels as might benefit the architect and strengthen the campaign. Through such co-operative tie-ups two things can be accomplished: increased publicity and mutual good-will for both architect and co-operators; and the gradual elimination of those competing elements which have infringed upon the architect's own provinces.

The question of paid advertising—similar to that done by the agricultural groups, the milk industry, etc.—should be carefully considered by the group charged with decision as to the nature and direction of the campaign. There are merits and faults in such group advertising. Some are obvious; others subtle and obscure. But under proper circumstances and control, group advertising can be an integral and important phase of a well co-ordinated and vigorous public relations campaign.

What has been found effective for other professional groups and industrial or commercial organizations, certainly might benefit the architectural profession. A brief consideration of how any other group has been organized and promoted will provide a line of attack for the architects' campaign. Some methods may be more spectacular than others, some results may differ in value and effectiveness. But the fundamental principles of organization and procedure are identical.

If every architect in the nation were to become a subscribing member to a national drive on behalf of his profession, it would cost him little more than the price of a good dinner. If the leaders in the profession, endowed with wealth, were to consider such a national campaign worthy of a bequest of considerable size, to aid the young and coming members, an Endowment Fund could be established which would, in a short length of time, be able to accomplish wonders for the entire profession. Operation of a national clearing house for ideas, advice and opportunity as a stimulus to building activity would soon put hundreds of now-idle artisans back into profitable employment.

Another method of obtaining funds might prove a practical possibility. This would involve the institution of a "voluntary sales tax" on jobs done by architects. The profession might agree that for a period of, say, two or three years or longer, a "voluntary sales tax" (commemorated by a stamp, perhaps) would be donated by each architect who had successfully completed and had been paid for a piece of work. The amount of such percentage contribution might range according to the amount of the fee. In the aggregate there would be established a splendid reserve fund for the purpose of carrying on a campaign for architects and for more jobs.

A series of exhibits, arranged from time to time at strategic or key points throughout the country, could also provide a source of revenue. A national exposition could do likewise. A nationally rotating show would be another means of fund raising, as well as publicity. At the present time many such efforts are being made locally. But they should

be co-ordinated for the national benefit of the profession, as well as for the individual and local benefits which would accrue.

A Board of Fair Practice, similar to the board of ethics of other professions, could be developed to the point where unfair competition from outside elements might be reduced to the minimum and any existing unfair tactics or practices within the profession itself be curbed.

In other words, there are many and devious ways through which the architect may be brought to the attention and consciousness of the public, with successful results. It is a matter for careful study and analysis, concerted action, and thorough campaign.

The avenues of approach seem almost obvious—the machinery, however, is intricate. The financial cost of such a campaign is negligible provided the right plan and the proper co-ordination of the profession is decided upon. Strange as it may sound, the matter of obtaining funds in these days, and administrations, is remarkably easy—provided a definite plan of campaign can be shown. The details of that plan, however, can be determined only after careful research and thoughtful consideration.

Money is being spent—more will be spent—on structural projects. At the bottom of the hill of future prosperity is where, today, sound plans must be made by architects. Without such plans the peak of this new order of prosperity and professional opportunity cannot be scaled. A census-taking within the profession may reveal part of the answer—the time is opportune for new planning. And who should plan better than an architect?

To summarize the foregoing:

The public must learn really to know the architect.

The opportunity must be developed for the profession.

The campaign must begin before undue time has been lost.

The profession must solidly support such plan as decided on.

The cost is negligible, and obtainable, without burden on the individual or the profession.

Lest all this appear either nebulous or ambiguous, let it be emphasized that machinery for a campaign necessary to accomplish the foregoing details *can* be provided. Details of it need not be stated here. The essential point to make is that there *should be, and can be* a national public consciousness generated on a proper basis for the individual architect and the profession as a whole. This could produce only one result—provision of adequate new opportunities for every substantial member and, in the eyes of the public, the firm establishment of the profession as a valuable technical factor essential to the successful conclusion of every building venture.

PLEASE ANSWER—Yes, or No . . .

BETTER BUSINESS for every architect in the country can be developed. How? By regaining public confidence lost to the profession through detrimental influences of organized competition. By telling everyone what an architect is, what he does, what his services cost. By creating a demand for architectural services on every type of structure.

The best way of accomplishing this is through the vigorous and continuing conduct of an educational program sponsored by every architect in the country — a Nationally Planned Public Relations Campaign for the whole architectural profession.

Two requisites for the success of such a program are organization and financing. If you realize the necessity of creating better business through education of the public, write immediately to the Editor of AMERICAN ARCHITECT answers to these two questions:

1. **Will you co-operate with all other architects in sponsoring a Nationally Planned Public Relations Campaign and, if necessary, act locally under direction to further it?**
2. **If a program for such a campaign were properly formulated under direction of acceptable trustees, would you help support it for a year by contributing a maximum of twenty-five cents a week?**

No obligation of any sort will be expressed or implied by your answers of "Yes" or "No". All that AMERICAN ARCHITECT desires here is a poll of opinion on the questions asked.

Winning Designs in the "Home Electric Competition"

Sponsored by the General Electric Company

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REPRODUCED on the following pages are the twelve small house designs that won, respectively, the grand, first, second and third prizes in the four classes of the "Home Electric Competition," recently conducted by the General Electric Company. With them are three drawings selected from those given honorable mention in classes A, B and C.

Fifty-four prizes, totaling $21,000, were awarded, inlcuding forty honorable mentions. From every state in the Union designers submitted a total of two thousand forty drawings which were judged in New York on March 19th to 23rd, inclusive.

The Jury of Award consisted of:

RALPH T. WALKER, F.A.I.A., Architect—Chairman
FRANKLIN O. ADAMS, A.I.A., Architect
ERNEST A. GRUNSFELD, JR., Architect
CHARLES T. INGHAM, F.A.I.A., Architect
H. ROY KELLEY, A.I.A., Architect
CHARLES W. KILLAM, F.A.I.A., Architect
ELIEL P. SAARINEN, A.I.A., Architect
KATHERINE FISHER, Director,
Good Housekeeping Institute
GRACE LANGDON, Director,
Educational Advisory Service, New York, N. Y.
HAROLD D. HYNDS, Chief, Constructive Section of the Subsistence Homestead Division, Department of the Interior
HUGH POTTER, President,
River Oaks Corporation, Houston, Texas

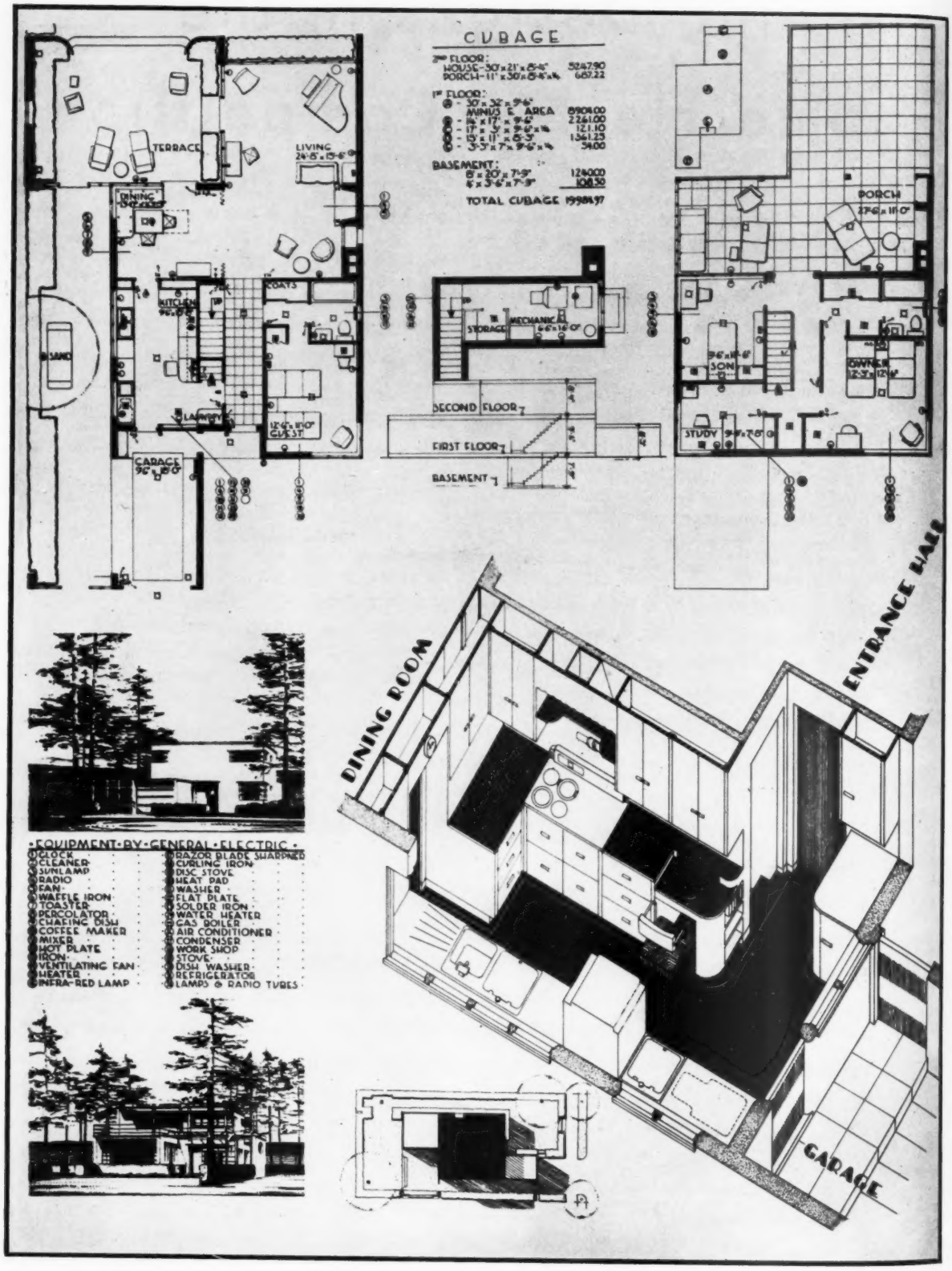
The Professional Adviser was
KENNETH K. STOWELL, A.I.A., and the Electrical Engineering Consultant, HENRY W. RICHARDSON.

THIS competition was essentially four simultaneous competitions. The problems presented were the designs of small and medium sized houses with two houses in each class—one designed for a northern climate and the other for a southern climate.

The program for the small house (class A and B) specified a house of not more than 20,000 cubic feet, to be built on a suburban inside level lot 50 feet wide and 100 feet deep. The owner's family was described as consisting of two adults and a boy aged four. They own an automobile and do not employ an all-time maid. For the Class C and Class D houses, competitors were asked to imagine a house built for a family consisting of two adults, a boy, aged fourteen, and a girl, aged nine. Provision was to be made for two automobiles and a maid. The program limited the size of the house to 35,000 cubic feet to be built on a suburban inside level lot 75 feet wide and 150 feet deep.

Competitors were required to present one drawing for the class in which entry was made. This sheet was to include plans at 1/4" scale with furniture and electrical equipment and outlets shown; plot plan at 1/16" = 1'0"; two perspectives of the house and a cubage tabulation and diagram.

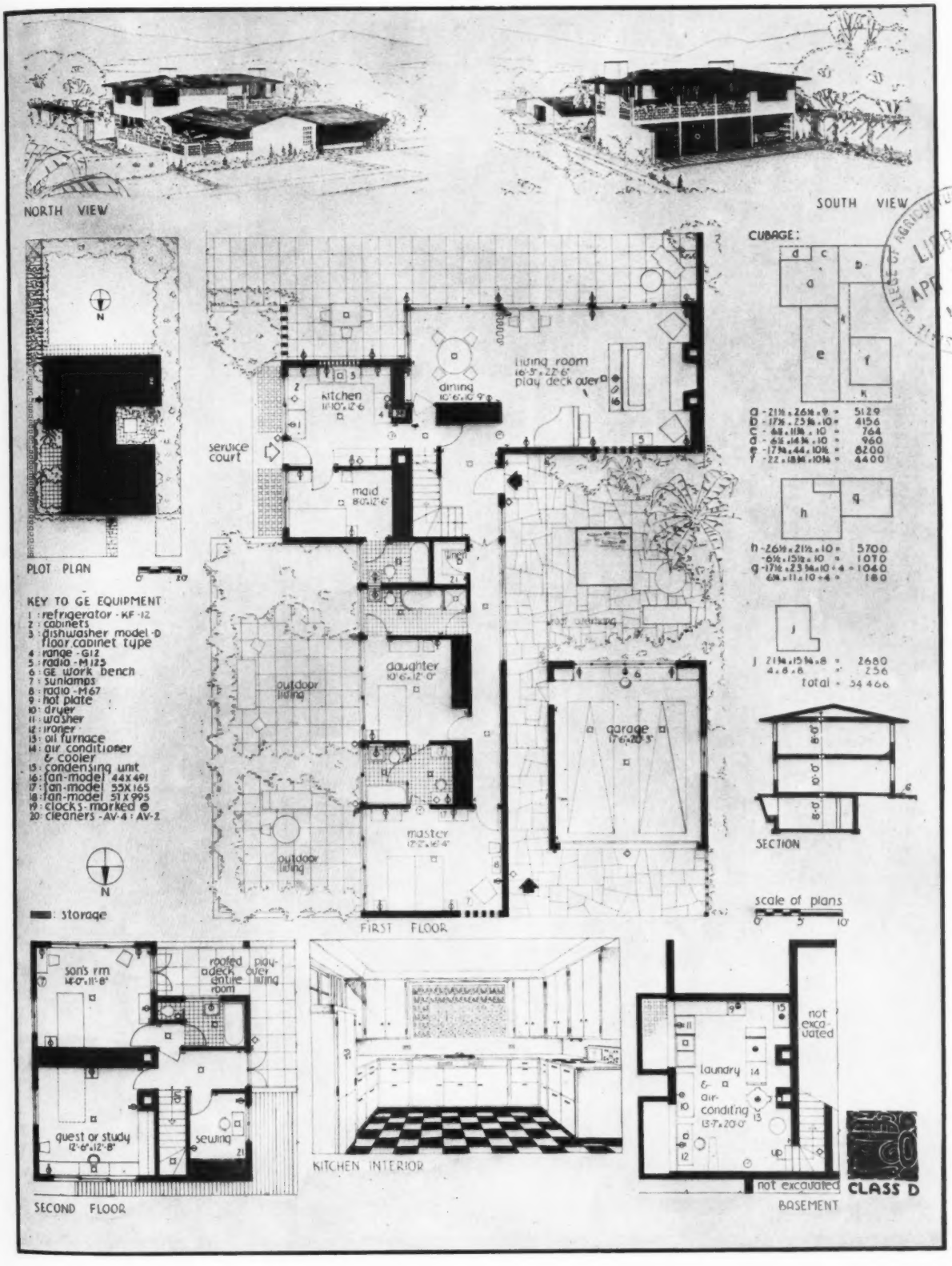
GRAND PRIZE, CLASS A and B



HAYS AND SIMPSON, ARCHITECTS

CLEVELAND, OHIO

GRAND PRIZE, CLASS C and D



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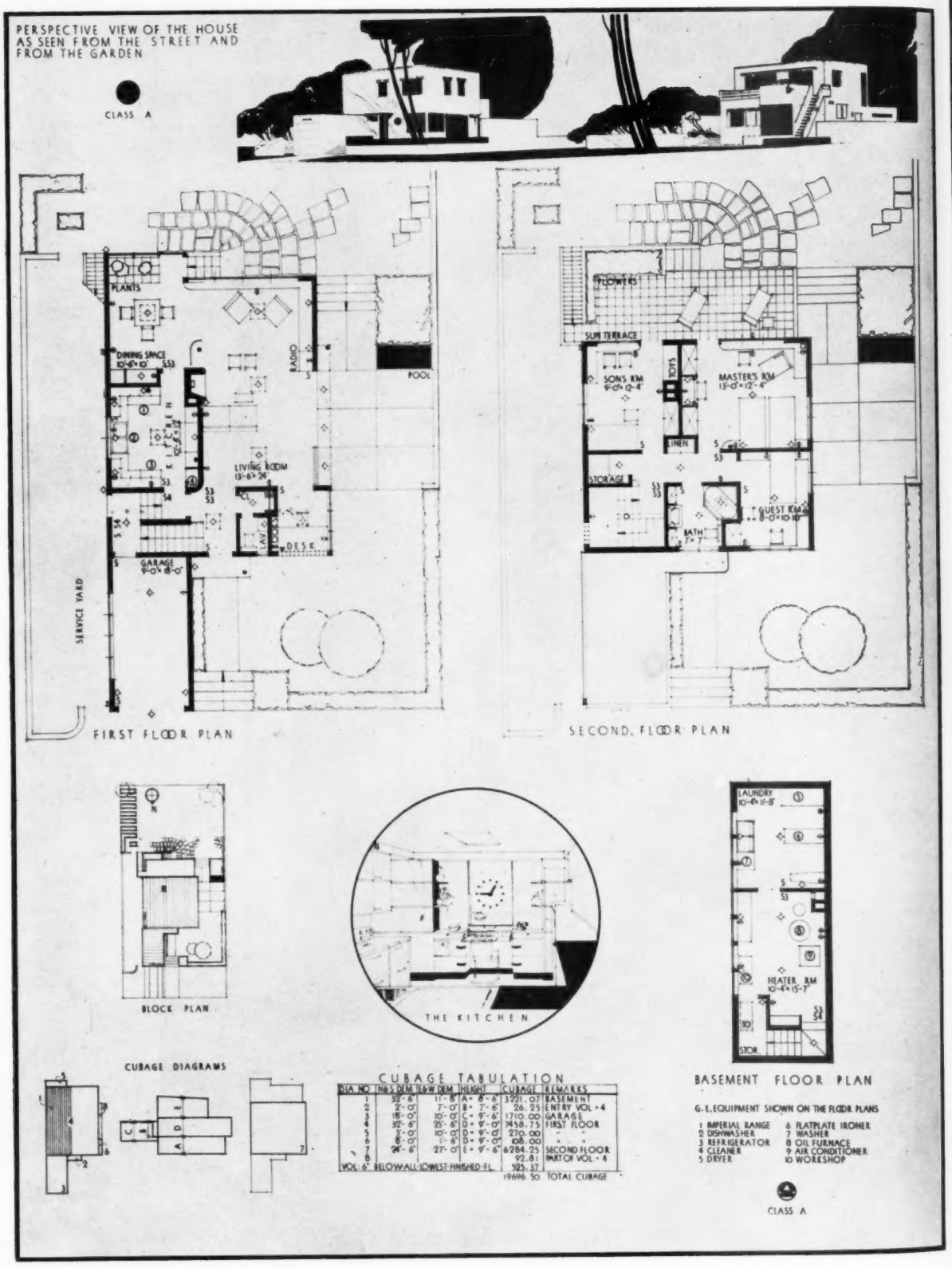
PAUL SCHWEIKHER AND THEODORE W. LAMB

CHICAGO, ILLINOIS

FIRST PRIZE, CLASS A



CUBAGE TABULATION

DIA. NO.	THICKS. DEM.	THICKW. DEM.	THEIGHT	CUBAGE	REMARKS
1	32'-6"	11'-8"	A = 8'-6"	3221.07	BASEMENT
2	2'-0"	7'-0"	B = 7'-6"	26.25	ENTRY VOL. +4
3	19'-0"	10'-0"	C = 9'-6"	1710.00	GARAGE
4	32'-6"	25'-6"	D = 9'-0"	7458.75	FIRST FLOOR
5	3'-0"	10'-0"	D = 9'-0"	270.00	" "
6	8'-0"	1'-6"	D = 9'-0"	108.00	" "
7	24'-6"	27'-0"	E = 9'-6"	6284.25	SECOND FLOOR
8				92.81	PART OF VOL. - 4
VOL. 6" BELOW ALL LOWEST FINISHED FL.				925.37	
				19696.50	TOTAL CUBAGE

G. E. EQUIPMENT SHOWN ON THE FLOOR PLANS

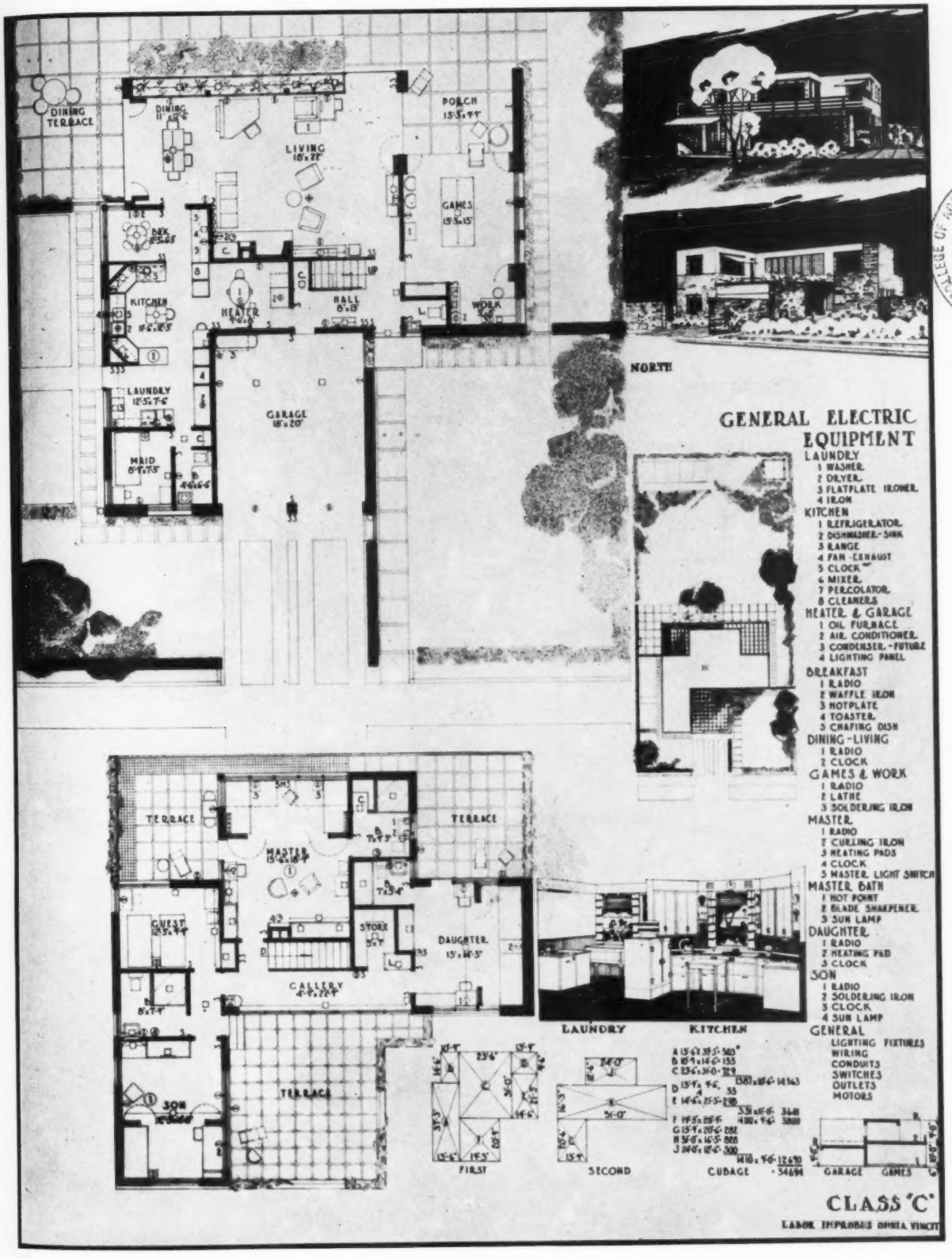
1 IMPERIAL RANGE	6 FLATPLATE IRONER
2 DISHWASHER	7 WASHER
3 REFRIGERATOR	8 OIL FURNACE
4 CLEANER	9 AIR CONDITIONER
5 DRYER	10 WORKSHOP

CLASS A

STEPHEN J. ALLING

NEW YORK, N. Y.

FIRST PRIZE, CLASS C



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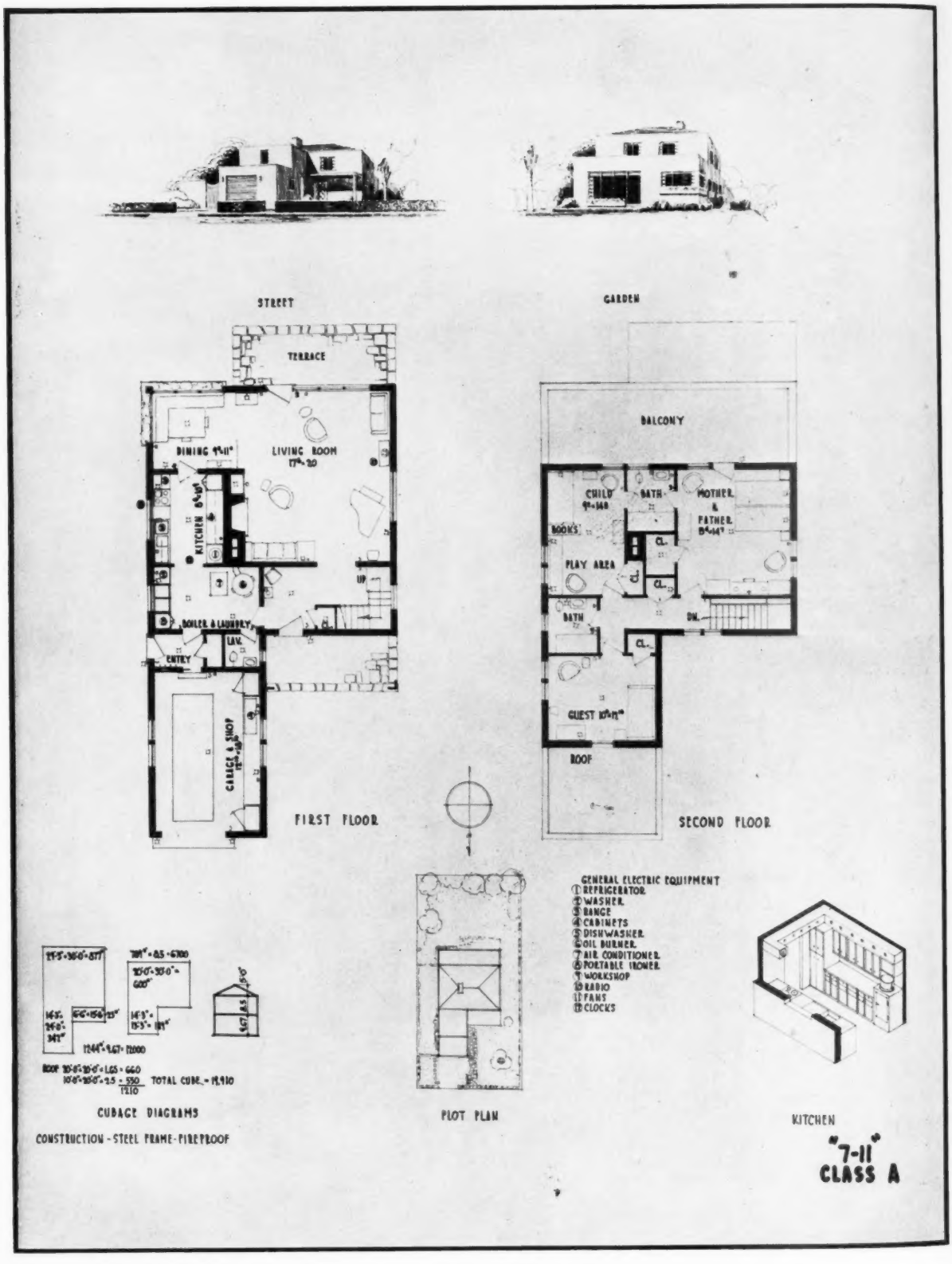
J. ANDRE FOUILHOUX AND DON E. HATCH

NEW YORK, N. Y.

SECOND PRIZE, CLASS A



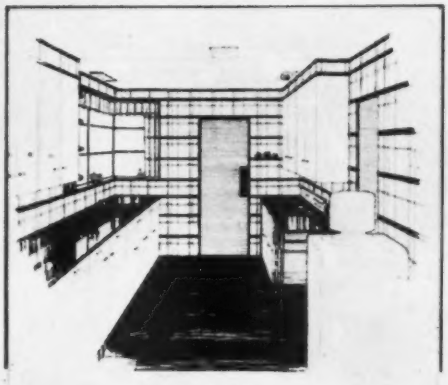
RALPH H. BURKHARD, RICHARD C. HOYT, ANGELO MESSINA

NEW YORK, N. Y.

SECOND PRIZE, CLASS B

LEGEND OF EQUIPMENT

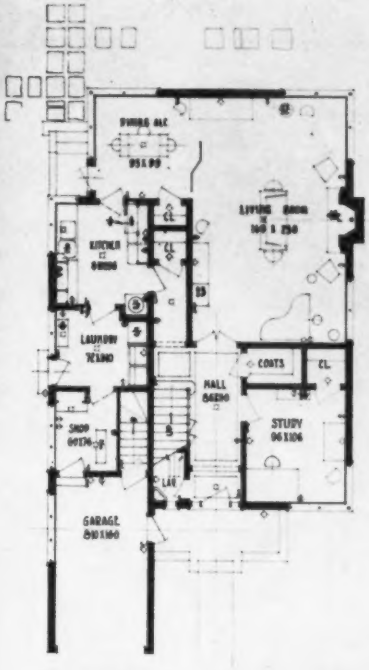
1 RANGE - MODEL GIZ - IMPERIAL
2 DISHWASHER - - MODEL DW
3 REFRIGERATOR - MODEL T7
4 CEILING VENTILATOR FAN
5 CLOTHES WASHER - AW 25
6 FLAT PLATE IRONER - AP 10
7 GENERAL ELECTRIC WORKSHOP
8 OIL FURNACE - MODEL - LA 5
9 AIR CONDITIONER - - AA5
10 COOLING COILS & AIR FILTER
11 CONDENSING COILS UNIT -
12 G-E SUN LAMP FLOOR TYPE
13 CONCEALED RADIATOR -
14 SUN LAMPS CEILING TYPE
15 RADIO - BANDMASTER - -
16 G-E CLOCKS - -



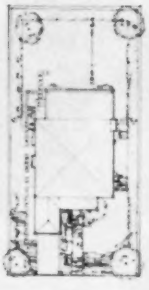
PERSPECTIVE OF KITCHEN

CUBAGE COMPUTATIONS

BASEMENT 115 · 125 · 15 · 1078
LESS 35 · 30 · 60 · 63 · 1016
GARAGE — 100 · 135 · 85 · 1148
PLUS 10 · 35 · 100 · 35 · 1185
FIRST FLOOR 29 · 39 · 364 · 10364
LESS 1025 · 375 · 934 · 365 · 10199
2ND FLOOR 29 · 29 · 80 · 7465
CHMY 10 · 20 · 60 · 80 · 7545
TOTAL CUBE 19063

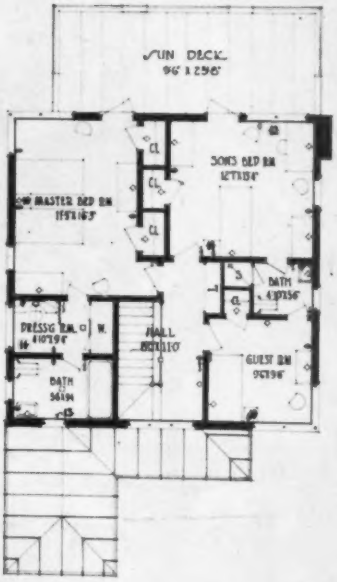


FIRST FLOOR PLAN



PLOT PLAN

BASEMENT PLAN



SECOND FLOOR PLAN

CLASS B

JOHN EKIN DINWIDDIE

SAN FRANCISCO, CALIFORNIA

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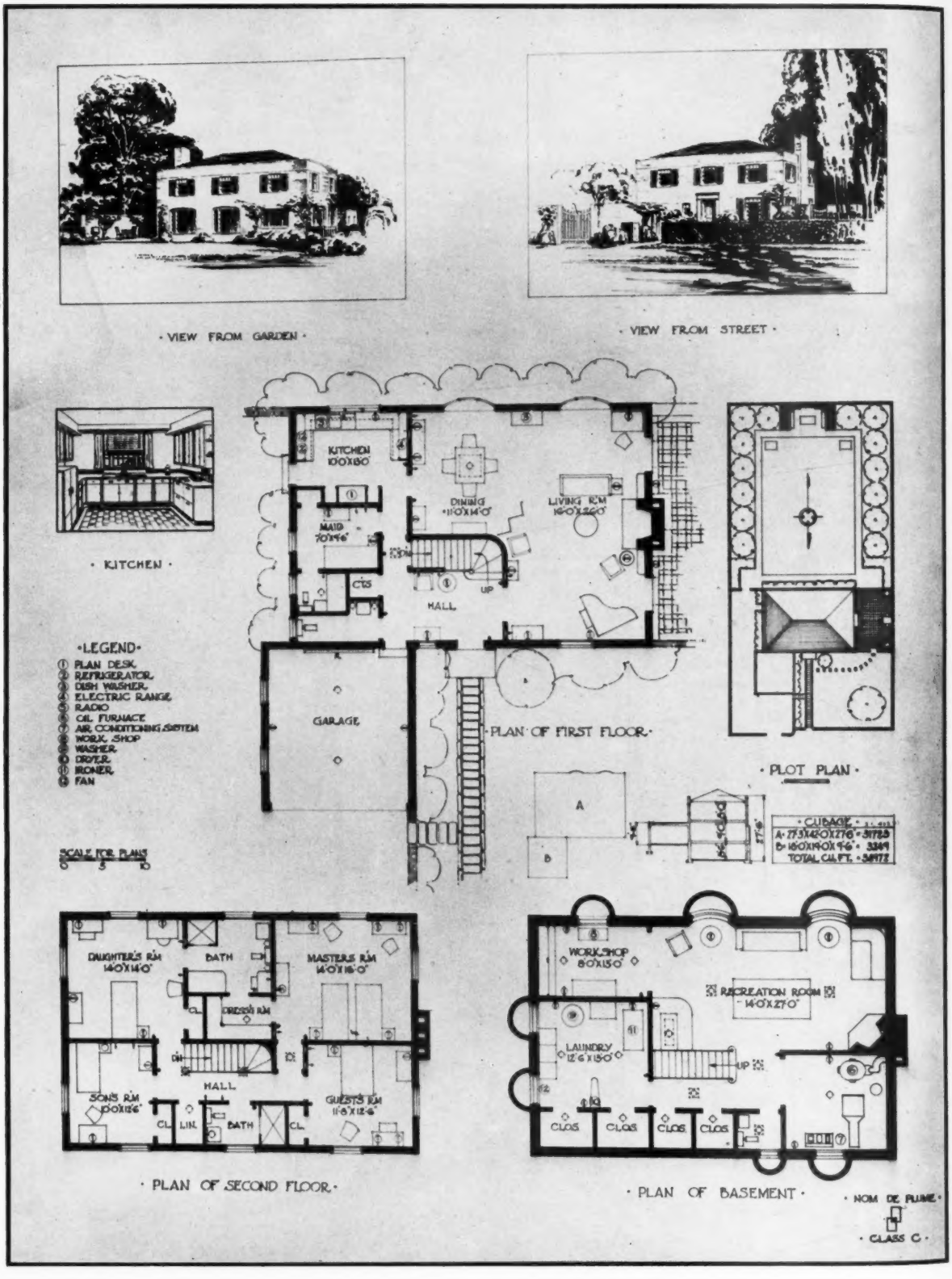
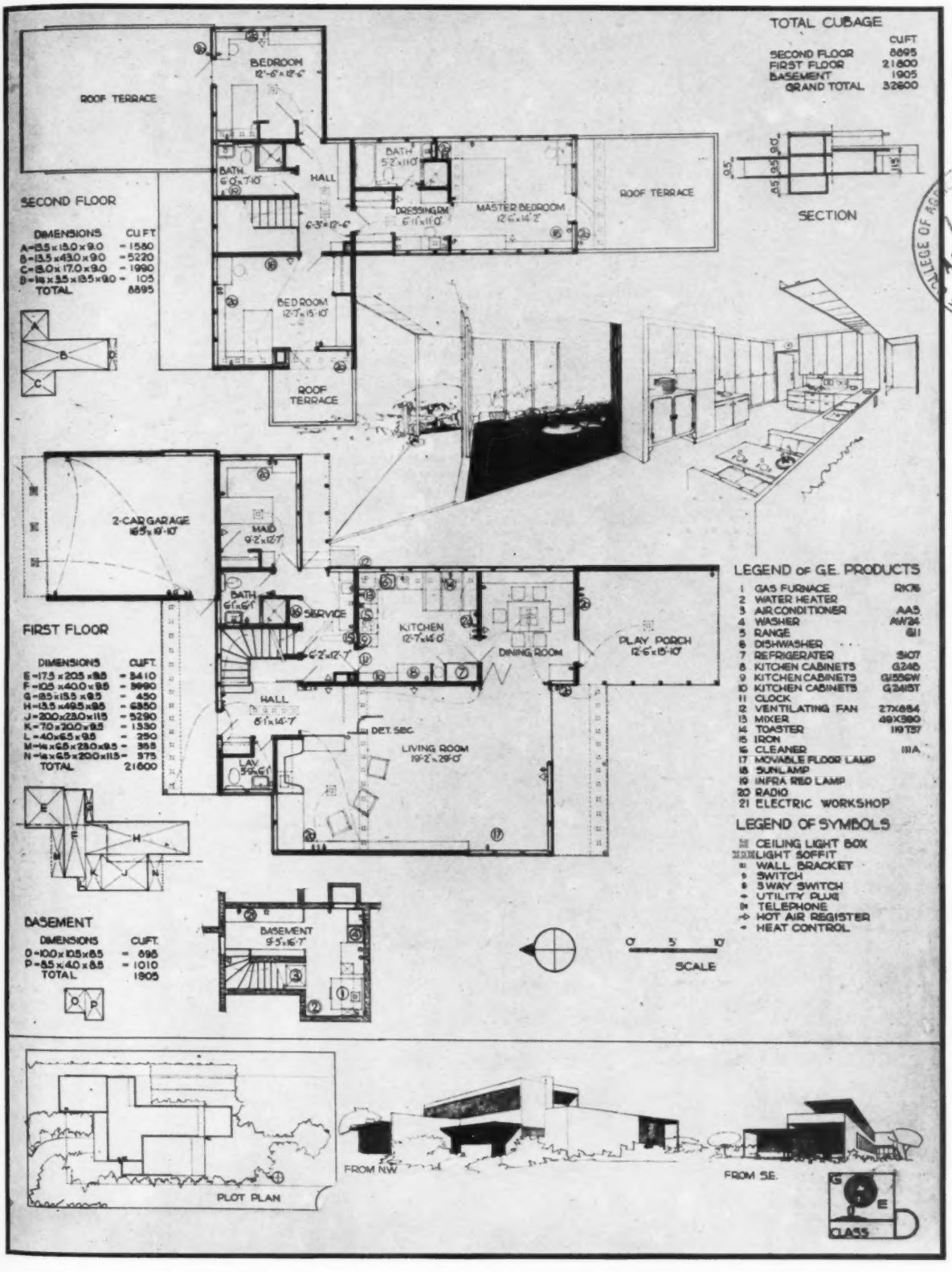
SECOND PRIZE, CLASS C



ARTHUR MARTINI, JONAS PENDLEBURY

FLUSHING, LONG ISLAND, N. Y.

SECOND PRIZE, CLASS D



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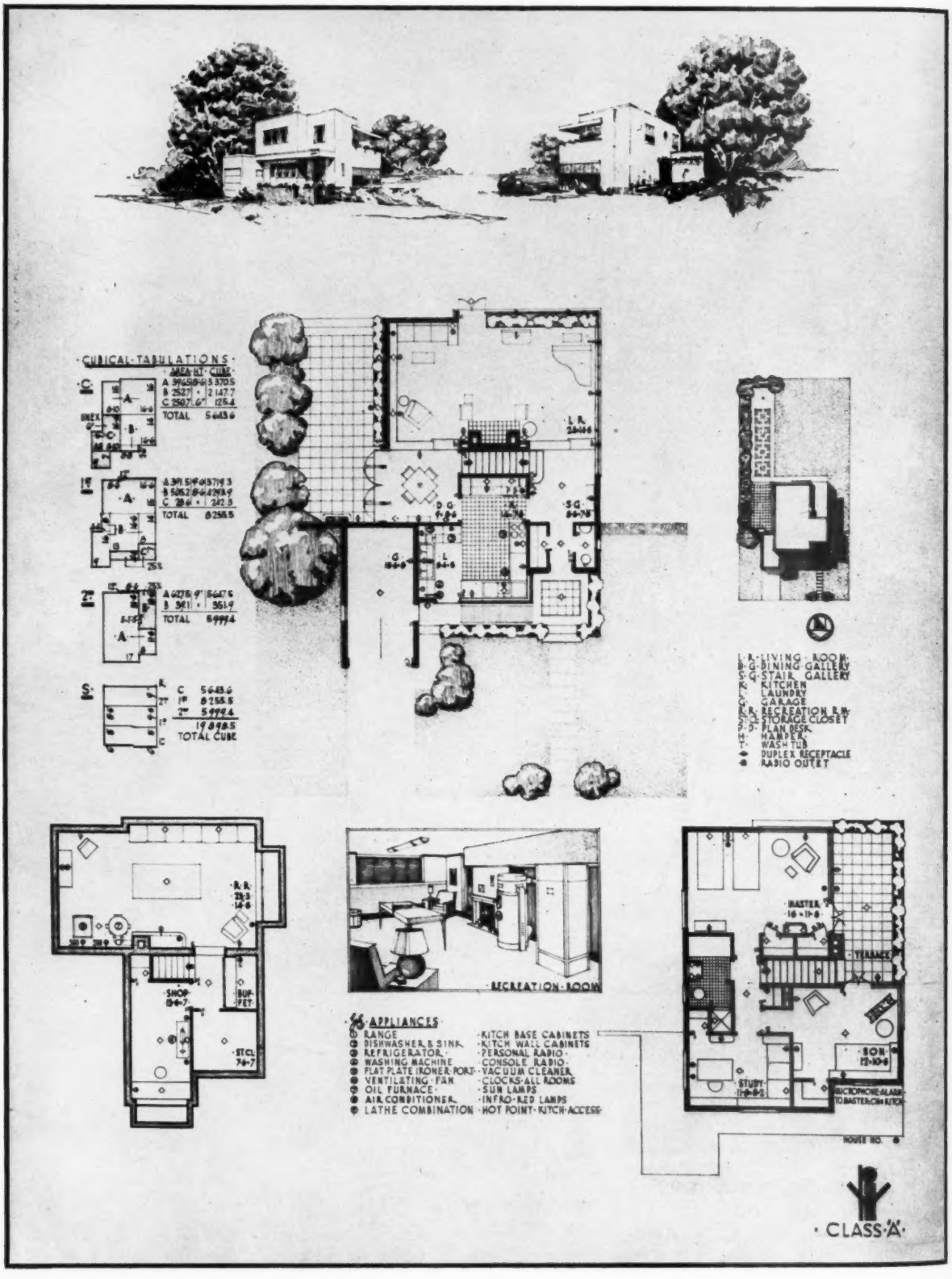
RICHARD J. NEUTRA

LOS ANGELES, CALIFORNIA

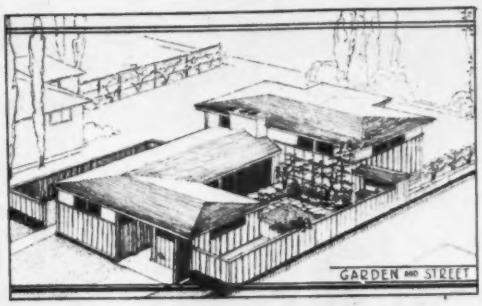
THIRD PRIZE, CLASS A

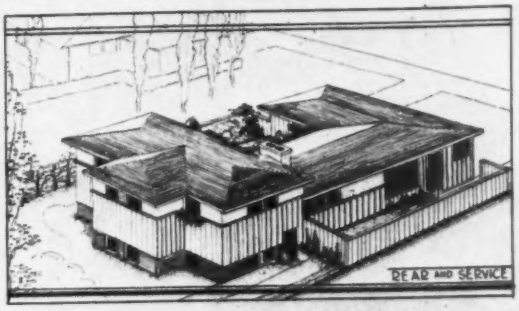


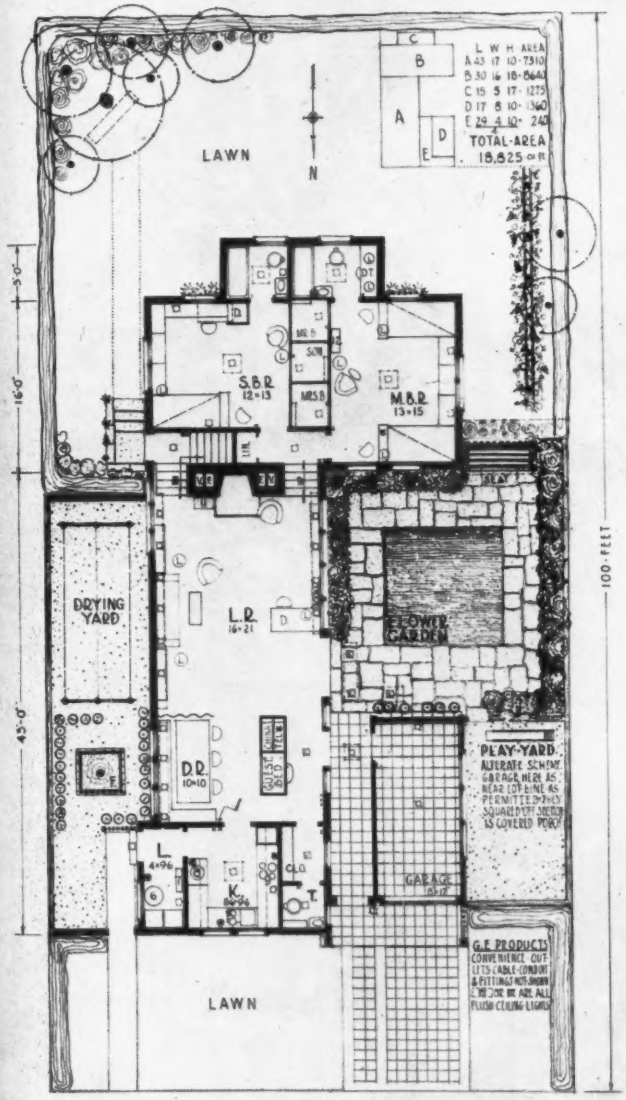
VERNER WALTER JOHNSON, PHIL BIRNBAUM

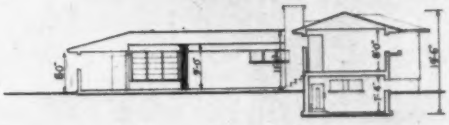
NEW YORK, N. Y.

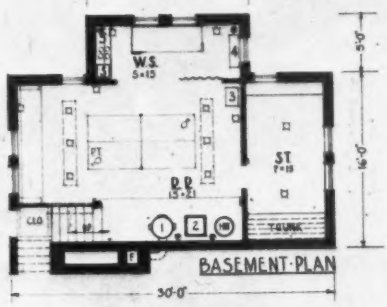
THIRD PRIZE, CLASS B



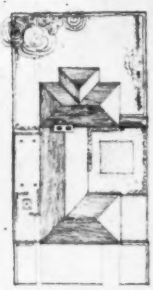




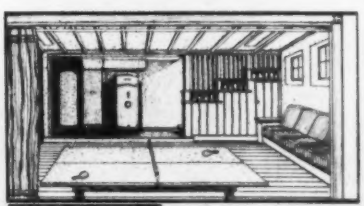




BASEMENT·PLAN



GENERAL·ELECTRIC·EQUIPMENT
RECREATION ROOM ① OIL FURNACE·FAN ② AIR CONDITIONER·③ RADIO·④ LATHE ⑤ ELECTRIC RANGE LIFT TOP REFRIGERATOR LAUNDRY ⑥ WASHER ⑦ IRONER FAN KITCHEN ⑧ REFRIGERATOR ⑨ RANGE ⑩ DISH WASHER·FOOD MIXER·EXHAUST FAN VACUUM CLEANER·FLOOR MACHINE DINING ROOM·TOASTER·PERCOLATOR WAFFLE·IRON CHAFING DISH·CLOCK LIVING ROOM ⑪ RADIO·FLOOR LAMP TABLE LAMP·CLOCK·SUN LIGHT LAMP MASTER BED ROOM ⑫ SEWING MACHINE SMALL RADIO·FLOOR LAMP TABLE LAMP HEATING PAD VACUUM CLEANER·FAN BED ROOM (SONS) CLOCK·SMALL RADIO FLOOR LAMP·HEATER SUN LAMP·STOVE ELECTRIC TRAIN·BATH ROOM·SUN LAMP·HAIR CURLER·SMALL IRON·DISC STOVE RAZOR SHARPENER·INFRA-RED LAMP.)



RECREATION ROOM

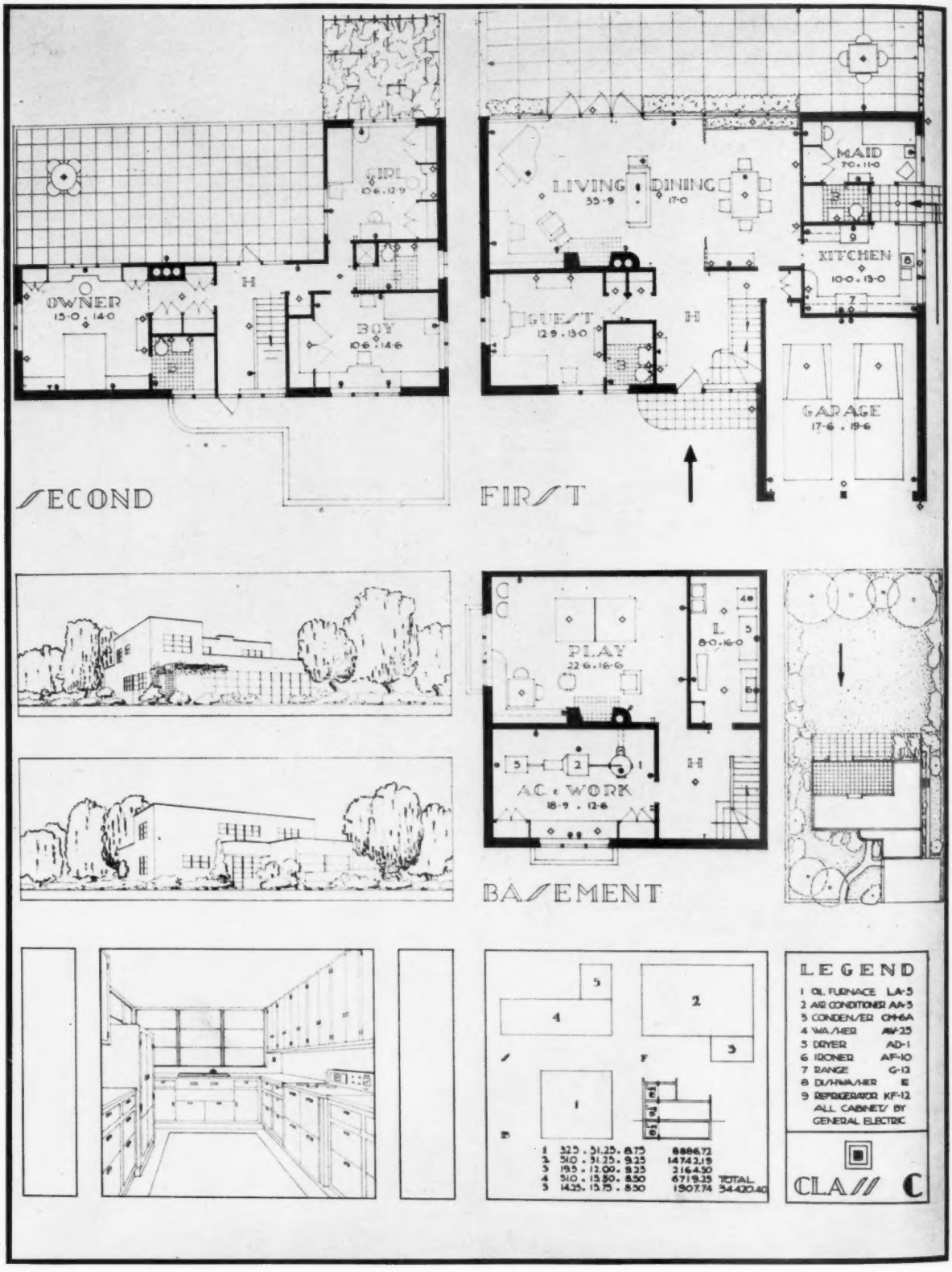
CLASS·B

DEPT. OF AGRICULTURE AND APPL. LIBRARY APR 27 1935 WASHINGTON D.C.

HERMAN A. L. BEHLEN

ARDSLEY, NEW YORK

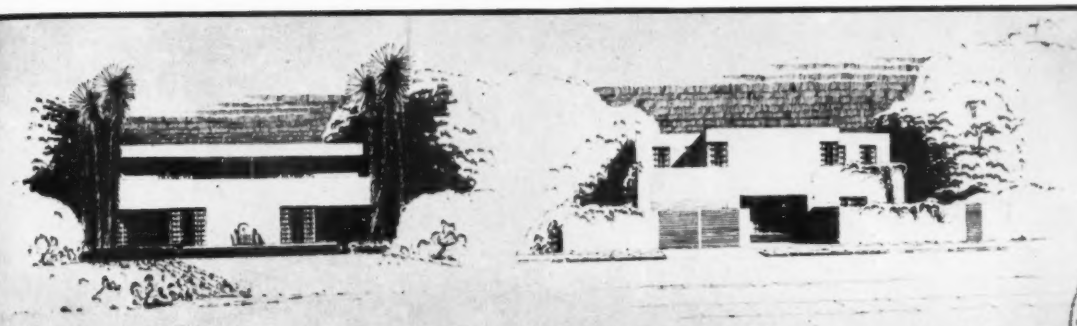
THIRD PRIZE, CLASS C

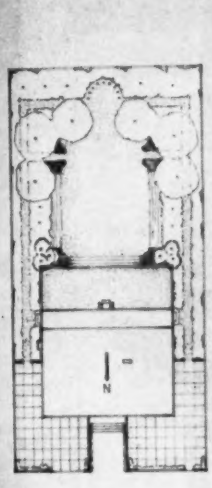


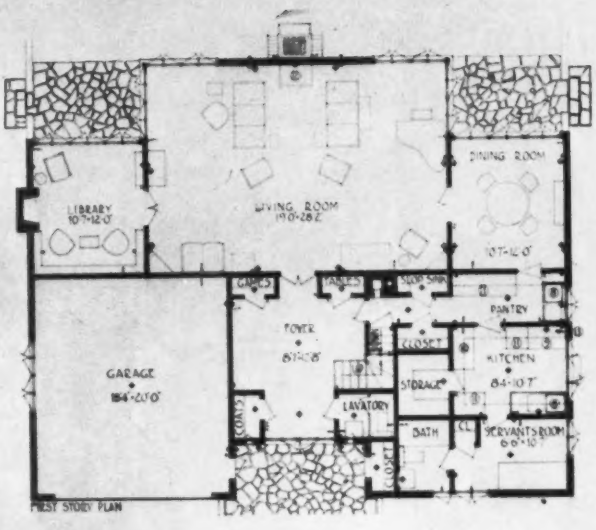
JOHN HIRONIMUS

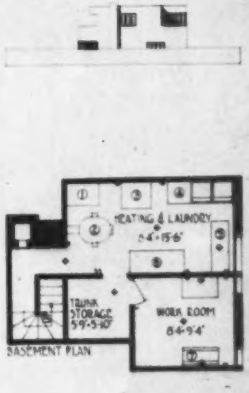
NEW YORK, N. Y.

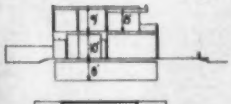
THIRD PRIZE, CLASS D

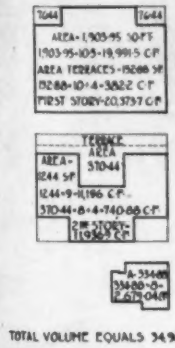


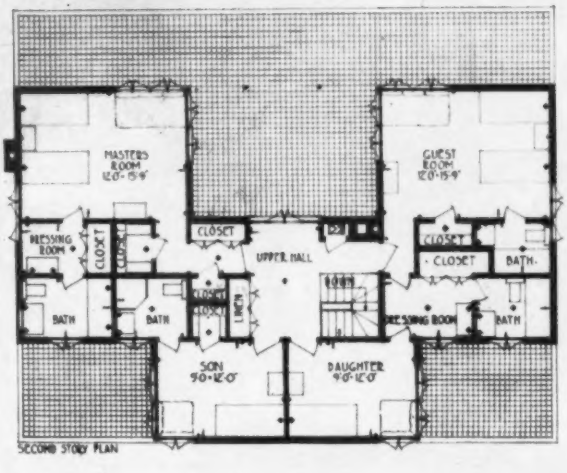






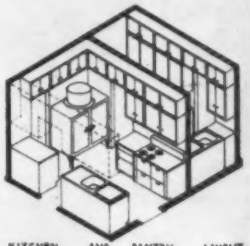






TOTAL VOLUME EQUALS 34,989.6 CU FT

GENERAL ELECTRIC EQUIPMENT
- CONDENSING UNIT
- OIL FURNACE
- AIR CONDITIONER
- WASHER
- IRONER
- DRYER
- WORKSHOP
- DISHWASHER
- RANGE
- REFRIGERATOR
- KITCHEN CABINET
- RADIO
- WALL VENTILATING FAN



KITCHEN AND PANTRY LAYOUT

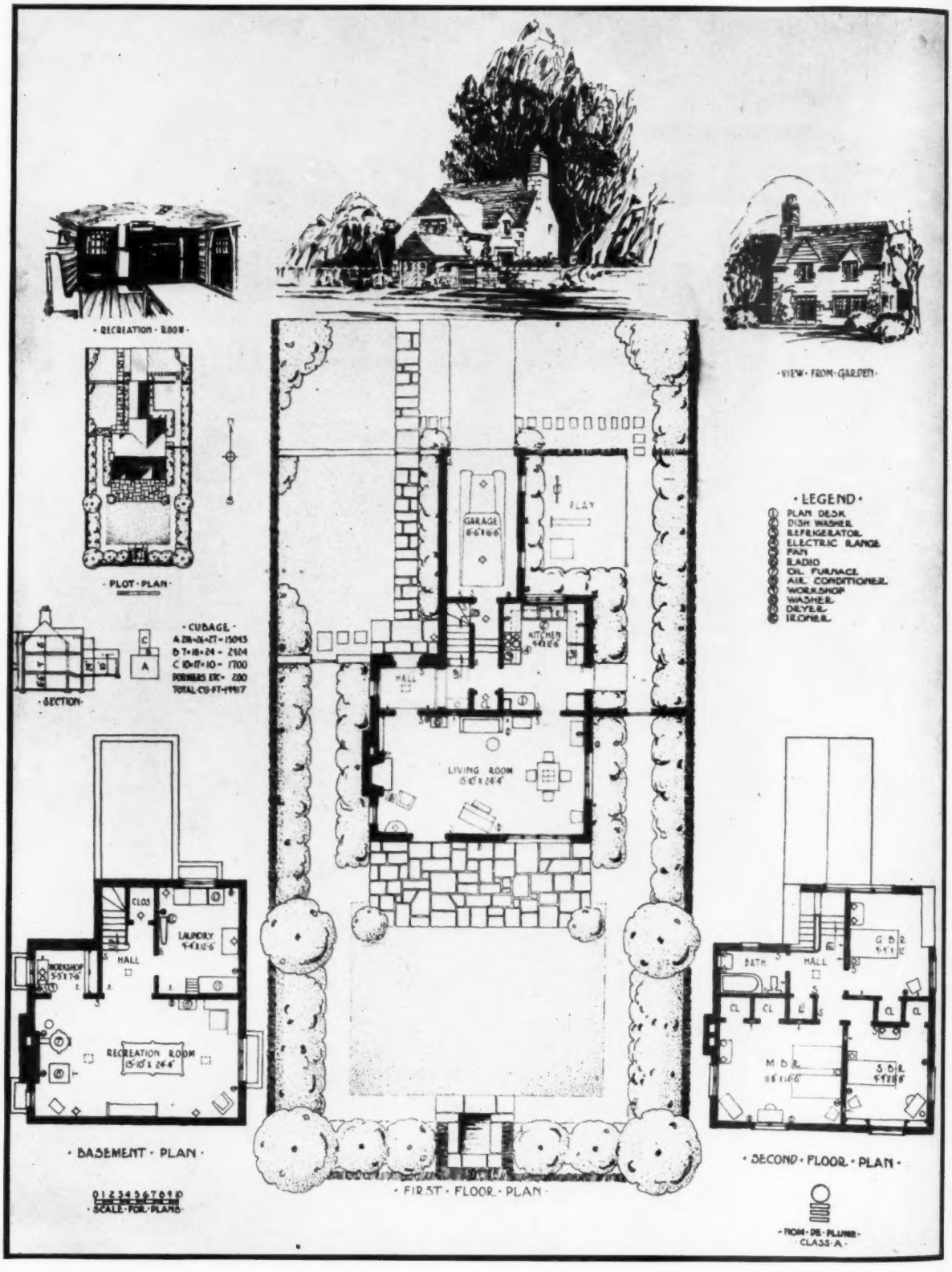
CLASS 'D'

COLLEGE OF AGRICULTURE AND APPLIED SCIENCE
LIBRARY
APR 27 1935
MANHATTAN
KANSAS

JOHN DONALD TUTTLE

NEW YORK, N. Y.

HONORABLE MENTION, CLASS A



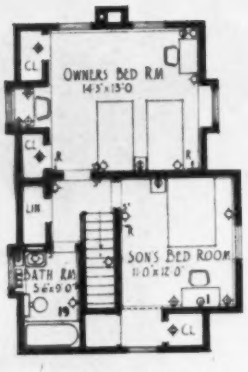
JONAS PENDLEBURY

SCARSDALE, N. Y.

HONORABLE MENTION, CLASS B

STREET

GARDEN

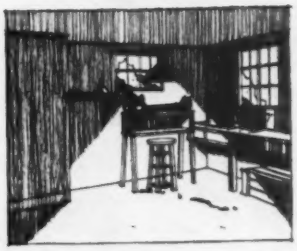


SECOND FLOOR PLAN

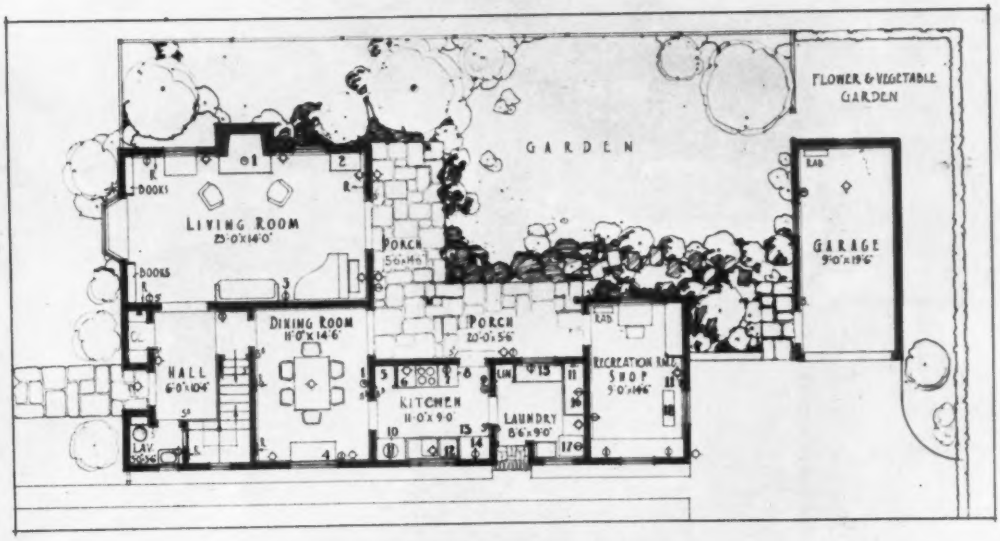
-LEGEND-

1 AB8B-OZ CLOCK	19 LMI SUNLAMP
2 M-86 RADIO	20 CM-8W CONDENSER
3 BMI SUNLAMP	21 RM-24 BOILER
4 1Z9GZI CHAFING DISH	22 AC-3 AIR CONDITIONER
5 GZ424 TB & AVC CLEANER	23 G-E COOLING UNIT
6 G-II RANGE	24 RETURN PLENUM
7 1119P83 PERCOLATOR	◇ CEILING OUTLET
8 G-2IB CABINET	◆ DROP CORD
9 AB2F-04 CLOCK	◇ WALL BRACKET
10 T-9 REFRIGERATOR	◈ WALL BRACKET PULL SW.
11 55 X165 FAN	⊕ FAN
12 DSF DISHWASHER, FLOOR OR	⊖ SINGLE CONV. OUTLET
13 G-36B CABINET	S LOCAL SWITCH
14 49X390 MIXER	S3 3 WAY SWITCH
15 AP-10 FLAT PLATE	⊙ MOTOR
16 AD-1 DRYER	⊠ PUBLIC TELEPHONE
17 AW-2S WASHER	● CLOCK
18 G-E WORK SHOP	

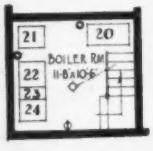
STATE AGRICULTURE AND APPLIED SCIENCE
LIBRARY
APR 27 1935
FORT COLLINS, COLORADO



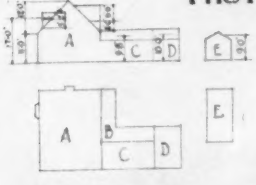
RECREATION RM. & SHOP



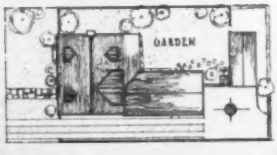
FIRST FLOOR PLAN



BASEMENT



A 24 X 30 X 17	12250
B 5.5 X 33 X 9 X 1/4	475
C 10 X 20 X 9.7	1940
D 10 X 15.5 X 10	1550
E 10 X 20.5 X 9	1845
BASEMENT 13 X 11.5 X 8	1196
DORMERS FLUE & BAY WIN.	636
TOTAL	19942



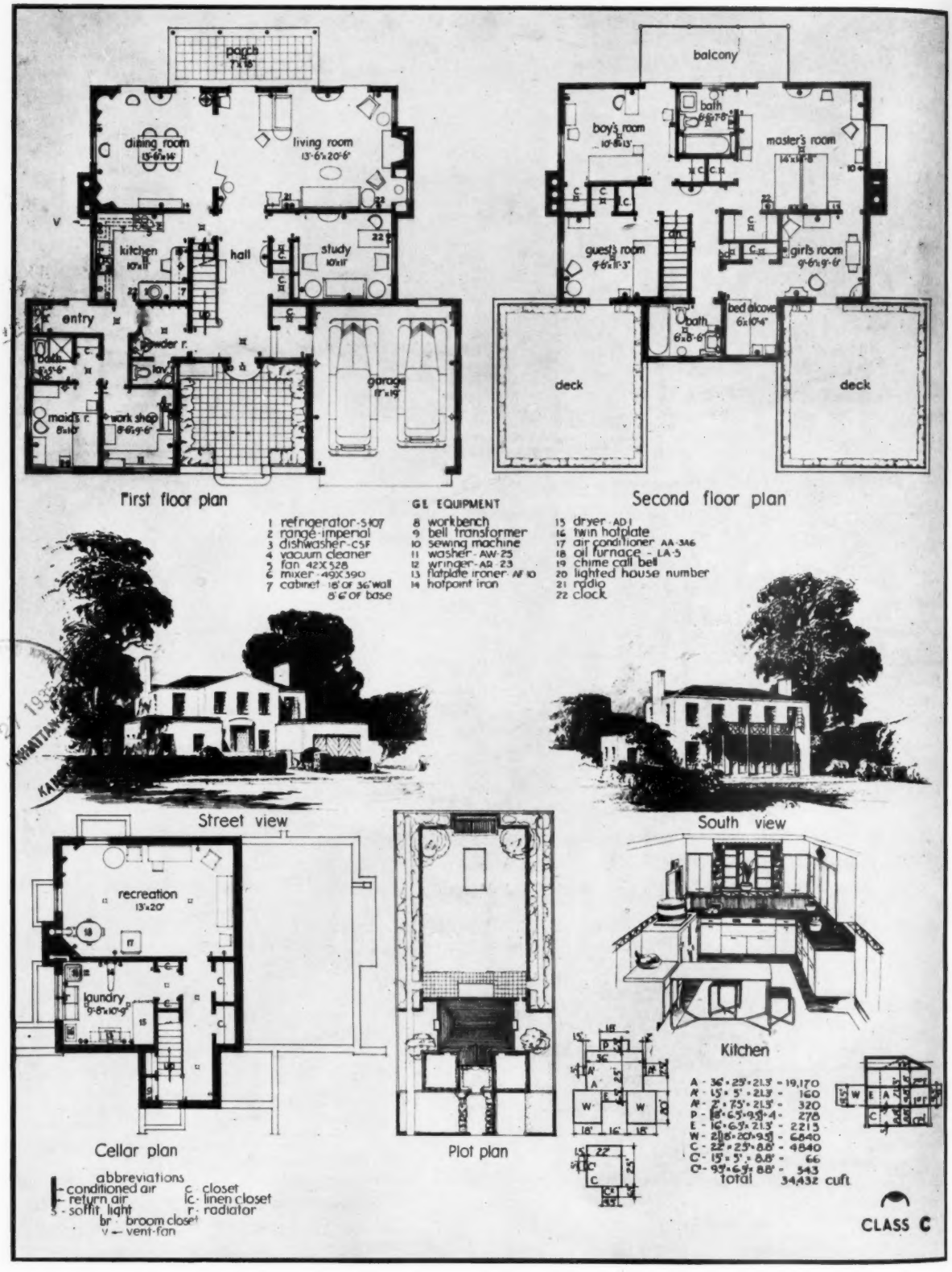
PLOT & ROOF PLAN

·SHOP· CLASS B

LOUIS A. THOMAS

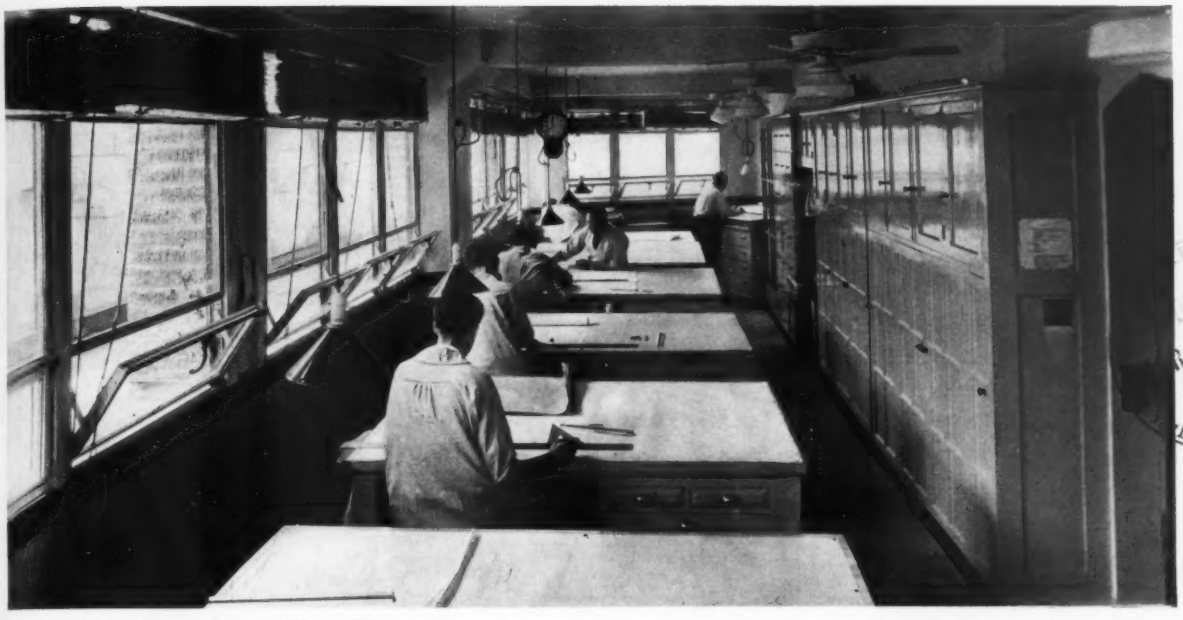
LOS ANGELES, CALIFORNIA

HONORABLE MENTION, CLASS C



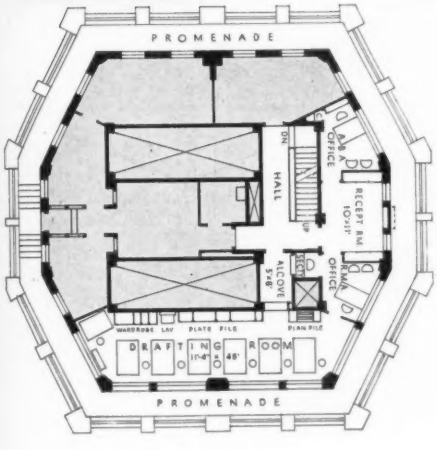
HARRIE T. LINDEBERG, DANIEL NEILINGER

NEW YORK, N. Y.



27 1935
MANHATTAN

Drafting Room in Office of Atlee B. & Robert M. Ayres, Architects



Efficiency Rules in this Pent-House Office

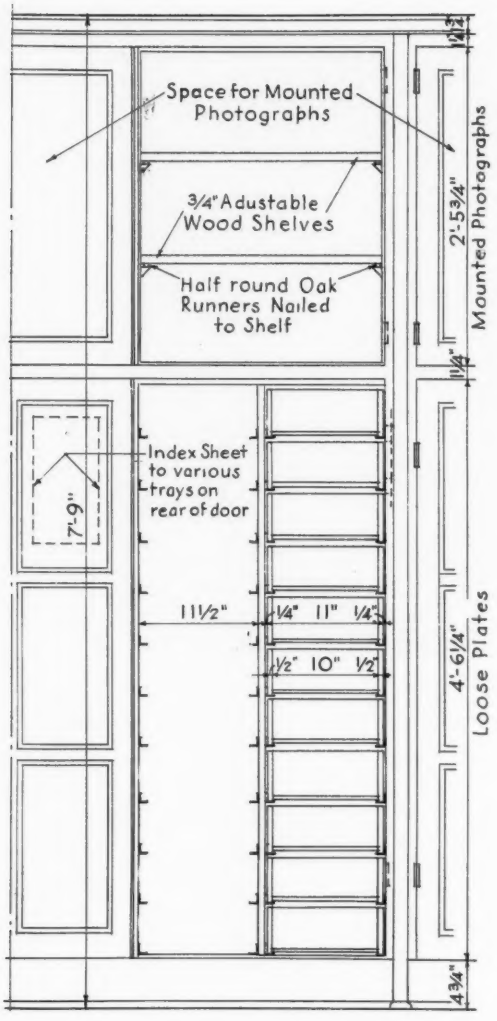
BY ATLEE B. AYRES, F.A.I.A.

A REQUISITE to success in any business is systematic efficiency. In practice this principle is particularly applicable to an architect's office. Magnificence in a reception room may awe an impressionable client; but orderly convenience and good equipment in the drafting room can do much to save time and overhead expense and consequently increase profits.

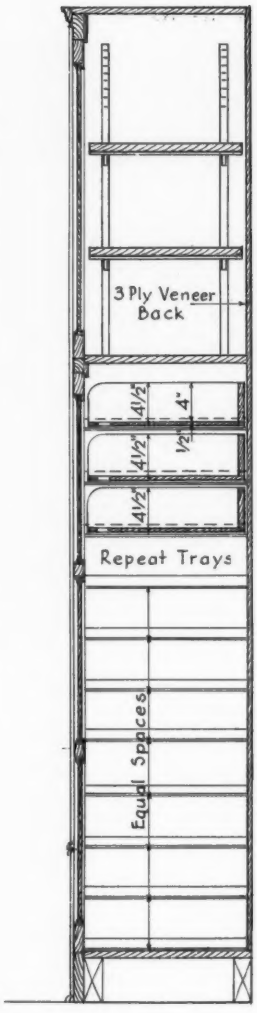
My office, on the 30th floor pent house of the Smith-Young Tower in San Antonio, Texas, is small with a simple layout as the plan above indicates. But the equipment has proved its practical worth.

The drafting room, located to catch prevailing breezes and lighted on three sides by large steel sash, is painted light cream. The floor is cement colored olive green and waxed. The interior wall is completely furnished with built-in equipment that includes a lavatory, wardrobe, plan files, cabinets for full-sized details and a filing case for architectural plates and photographs. This last has proved an invaluable facility in the production of accurate and economical plans. It holds a large portion of the 160,000 architectural plates and photographs, which, together with about 600 volumes make up our working library.

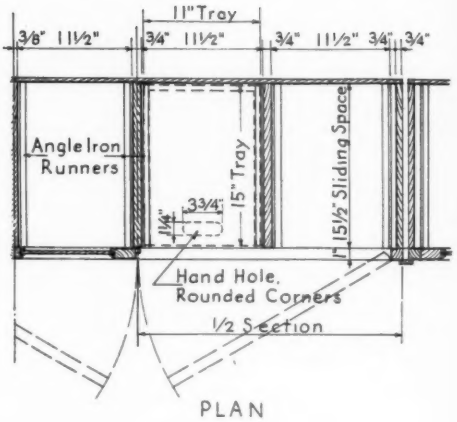
In this filing cabinet, 14 ft. long and 8 ft. high, our office, at least, has found an answer to the problem of filing reference material so that it is quickly available to the drafting room and office force. Behind enclosing doors the cabinet is divided into two



ELEVATION



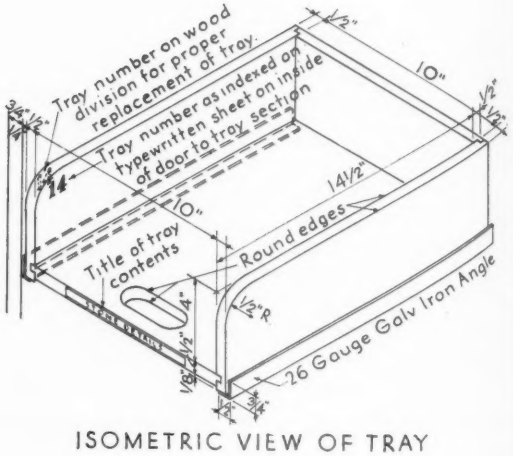
SECTION



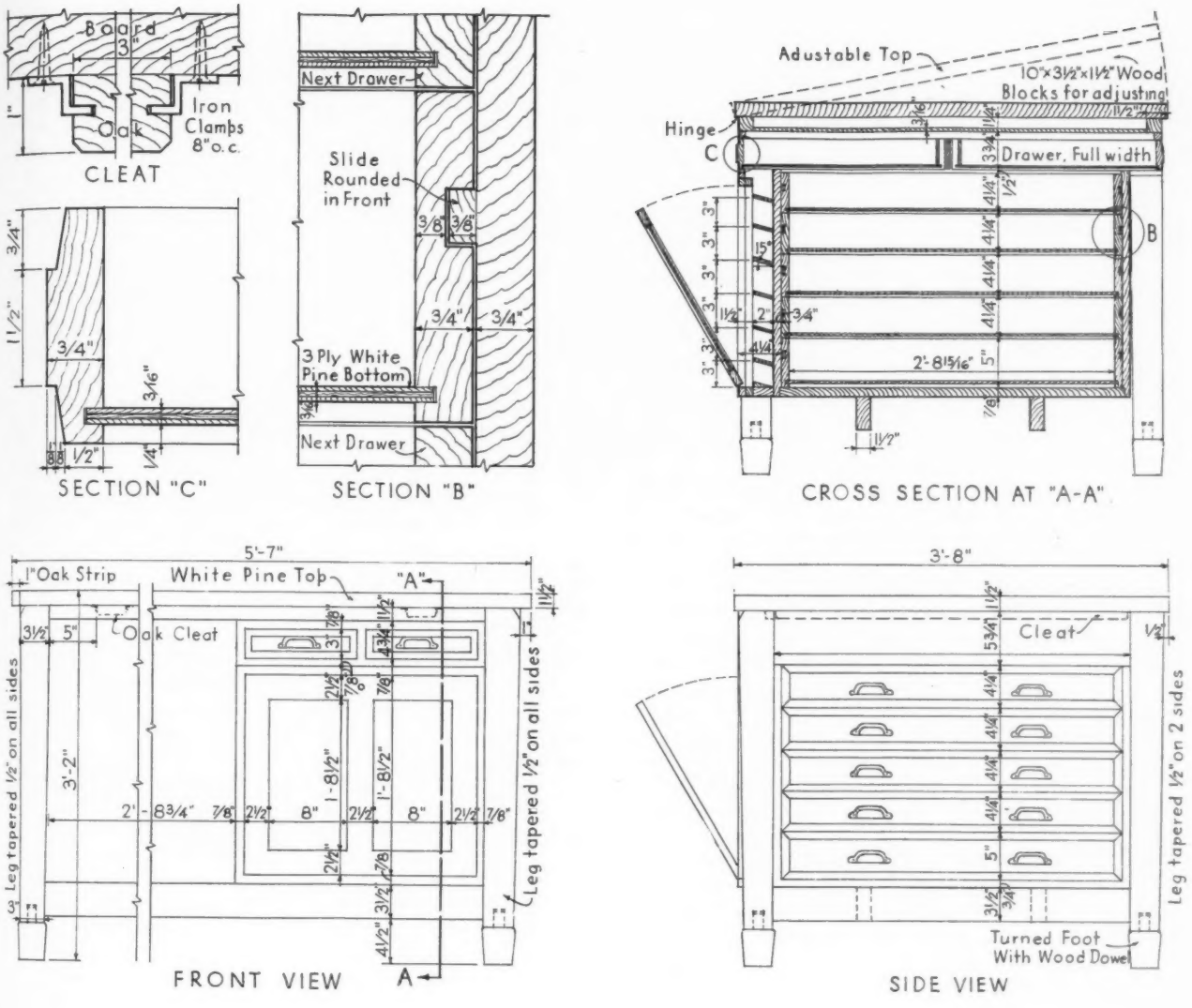
PLAN

WORKING DETAILS OF EFFICIENT OFFICE EQUIPMENT

From the ¾ in. scale drawings on these two pages can be built drafting tables and filing cabinets that will add immeasurably to the orderly convenience of any drafting room. On this page: typical sections of the cabinets where architectural plates and photographs are filed in the office of Atlee B. & Robert M. Ayres. The cabinet is 14 ft. long and 8 ft. high and includes two sections protected by paneled doors. The upper one contains about 5,000 photographs of architectural subjects, classified and indexed. Below it are 134 open-faced trays containing architectural plates, filed according to an index covering 200 classifications. . . . On facing page: drafting table with hinged top paper racks, storage space for supplies and drafting instruments and five full-width drawers for plan filing. The Ayres' office contains seven of these specially built tables. Each measures 3 feet 8 inches by 5 feet 7 inches and is fitted at the back with a full-length drawer for use of the man in front


Tray number on wood division for proper replacement of tray.
Tray number as indexed on typewritten sheet on inside of door to tray section
10"
14½"
Title of tray contents
Round edges
½"R
26 Gauge Galv Iron Angle

ISOMETRIC VIEW OF TRAY



sections. In the upper one are filed about 5,000 mounted and classified photographs of architectural subjects. The lower section contains 134 open front drawers to hold architectural plates which have been trimmed to a uniform size and numbered to correspond with a drawer number. Drawers are 5 by 11 by 15 ins., are supported on light steel angles and have a finger hole in the bottom. Classification is not as thorough as we would like due to lack of space. Ideally there should be about 200 divisions. Plates are trimmed and filed about every four months. Text matter is indexed according to classification and filed in a steel cabinet.

Tables are to the draftsman what any piece of fine equipment is to a machinist—really an essential tool. Thus, in our drafting room they have been detailed and arranged to give the utmost in convenience and utility to those who use them. Although movable, the tables are made so that two men use them in a permanent location. Each measures 3 ft. 8 in. by 5 ft. 7 in. Tops are hinged at the front. At the side of each are five large drawers for drawings. In front are two small drawers for drafting instruments and a shallow bin with racks for paper or rolled tracings. At the back is a full-length drawer for use of the man on that side.

Well-planned and well-built filing cases and drafting tables are the most important parts of our office equipment. But other conveniences help. There is a contractors' alcove, for example, where current plans and specifications are on file. An electric call system and intercommunicating telephone connect office and drafting room; and the latter is equipped with a radio.

As It Looks

NOTABLE COMPETITION RESULTS

COMPETITIONS do not always produce results that reflect a trend or add anything of value to the store of general information. The Home Electric Competition sponsored by the General Electric Company—prize-winning designs of which are shown elsewhere in this issue—proved to be a notable exception. More than 2,000 designs were submitted. Thus, results can be considered as fairly representative of the country's convictions regarding the small house. Over 75 per cent of them were definitely "modern" in the sense that traditions of small house planning and design were cast aside. A large proportion evidenced a general preoccupation with the use of modern materials as indicated in disposition of spaces and employment of unusually large window areas. In many plans the dining room was eliminated as a separate unit. Flat roofs predominated, many of them being designed as attractive living terraces. Generally speaking all of the designs submitted showed a realization that the problem of the small house is not that of reducing a large dwelling. For the public the results of the Home Electric Competition indicate the expert capabilities of architects in the small house field and forecast an encouraging rise in the standards of small house planning, design and equipment.

PRIVATE MONEY

NO amount of money the Federal Government can find practicable to allocate for building construction can have a marked effect on building revival as an aid to national business recovery. The amount of money needed would be enormous and the time required to put it into circulation would be too long. Private construction which is needed and which can proceed faster is the answer. Private financing is important to private building. An encouraging trend in this direction is the approval of the Federal Housing Administration of two limited-dividend housing projects in Washington, D. C. and Meadville, Pa. In both cases the projects represent private initiative and private financing.

COURAGE TO PRINT THE FACTS

PROFESSIONAL controversy is not confined to the field of esthetic taste in design. Proof of this came when the technical editor was gathering data for the reference article, "Waterproofing and Dampproofing," which appears in this issue. As in all AMERICAN ARCHITECT reference articles, the facts of the subject—which is a highly controversial one among trade experts—have been collected, analyzed and presented without bias and without regard to pressure from some divisions of the industry to discard statements competently supported by others. Thus, accepted before it came was the implied challenge of one manufacturers who said, "I doubt whether your publication will have the courage to print the facts." As published, the article may develop more controversy. This will be welcomed; and all readers are urged to submit additional facts "pro" or "con" to clarify this important field.

HOME HAZARDS

THE kitchen, according to Mrs. B. F. Langworthy, President of the National Congress of Parents and Teachers, is the most hazardous room in the house. At a safety conference she stated that 34 per cent of all home accidents occur in the kitchen and 23 per cent on stairways. Most kitchen accidents were attributed to "rag rugs, hot dishes, electric washing machines, gas ranges and sharp knives." Thus there seems to be little an architect can do to make for greater safety in the kitchen unless it be to caution housewives. But by designing less hazardous stairways architects can play an important part in making houses safer to live in. Watchfulness during the installation of electrical and heating equipment can avoid fire hazards and thus promote the cause of safety. There are many other instances not related to life and limb by which architects contribute to safe and comfortable living. The public should know how architects minimize the hazards of building. It will not unless architects tell the facts.

DEMAND MUST BE CREATED

FOR many years architects have considered it more or less unprofessional to seek work. It must be admitted that it is a great source of satisfaction to have the job seek the man rather than the man seek the job; and in such a case, also the architect is in a far better offensive position to deal with the client. But in taking the let-work-come-to-me attitude, architects have been merely supplying a demand. Conditions have changed materially in the past quarter century. Today it is essential that architects not only supply a demand, but also—in the language of the producer—that they create new markets for their service and more thoroughly "sell" their service in the logical channels which have always existed.

to the Editors

THE PULSE OF PUBLIC TASTE

THE *Chicago American* recently conducted an air conditioned home contest. Readers were asked to answer nine questions and write letters, all pointing toward what might be considered an ideal house. As a result of the contest, the newspaper will build three houses in the vicinity of Chicago, designs of which will be based upon collective recommendations. It is interesting to examine the trend of public thought as reflected by the replies submitted. The "modern" style was the choice of 38.7 per cent of those who entered the contest. The second choice was "American Colonial," 31.4 per cent. Other styles indicated ranged from "English" 17.8 per cent to "Italian" 1.2 per cent. In the matter of material for outside walls 67.8 per cent chose brick; 12 per cent, clapboards and siding. Stucco, metal and shingles as exterior materials were about equally divided in the minds of the contestants.

A six-room house apparently meets the needs of most families, since 41.2 per cent desired it. Those desiring a five-room house represented 22.7 per cent; seven rooms, 19.7 per cent; nine rooms or more, but 4.1 per cent; and four rooms 3.2 per cent. Two bathrooms were definitely a desirable factor. And as for heating, hot-water received the largest vote, with oil as the fuel. Ninety-five per cent of the replies desired summer cooling. The question of the attached or detached garage was almost a "draw."

Most of the replies are about what might be expected as a reflection of what the public wants. The surprise to many may be the large percentage who favor the "modern" in design. Evidently this idea is capturing public imagination more rapidly than is generally realized. It is an important trend to watch.

SMALL HOUSE COMPETITION

FOR many years *House Beautiful* has conducted an annual small house competition. The 1935 Competition which closes October 15th is divided into three classes; new houses of 8 rooms and under; new houses of 9—12 rooms; and remodeled houses of not more than 12 rooms. Suitable cash prizes will be awarded for the best houses submitted in each class. These competitions have served to bring to the public's attention the best small and moderate sized houses built in various parts of the United States; houses which are of great interest to potential builders of new houses. Selected by a competent jury of architects these houses go far toward carrying the message of good architecture directly to thousands of people interested in building. Architects should give serious consideration to the possibilities offered by this type of competition and submit such work as they believe to be of interest.

REDUCE COSTS TO BOOM BUILDING

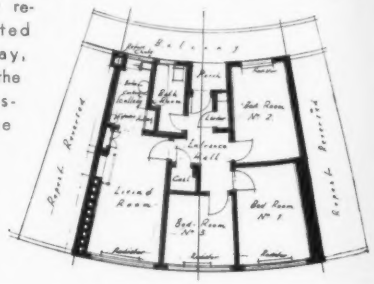
BEFORE a recent meeting of the Harvard Business School Club, Professor Oliver M. W. Sprague advocated a reduction of 25 per cent in construction costs as essential to the stimulation of building. He indicated that cost reduction of sizeable proportions could be affected only by bringing together all interests concerned in construction operations. The need for reduced building costs has been evident to the building industry for some months. It is a desirable objective that is more easily stated than secured. It can be realized only as a result of broadminded and sincere co-operation of labor and producers from a long range point of view; through discoveries by science and engineering of more economical construction methods; and by the highly efficient conduct of building procedure from beginning to end. It is a difficult problem. But it is one that, perhaps, *must* be solved.

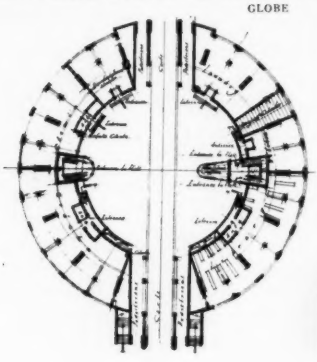
AN ORCHID TO THE PUBLISHERS

MAGAZINES edited to stimulate the layman's appreciation of better houses have done much to impress public taste in this direction. Largely a result of the work of these magazines, architects find an increasingly large clientele willing to accept good design and often presenting good ideas of their own for development. Those magazines read by the layman, in some cases, have not confined their efforts solely to pages within the magazine. *House Beautiful,* for instance, annually sets up a "Bride's House" in which are shown well designed rooms that reflect trends in interior decoration, color schemes, furnishings and equipment. The practice has done much to develop the layman's appreciation of good design. This year the "Bride's House" which opened April 1st has been set up at 444 Madison Ave., New York City. These exhibitions are something which an architect's client can see and feel and imagine himself living in similar surroundings. They are an important educational factor. As public taste runs to new levels, the field of the architect increases.

XUM

Housing is as much the question of the hour in England as it is in this country. In vivid contrast to the sandstone caves, left, at Blaksehall, Worcestershire, which have been occupied for over 50 years, is the radically modern circular housing project recently submitted by L. H. Keay, F.R.I.B.A., to the Liverpool Housing Committee





GLOBE

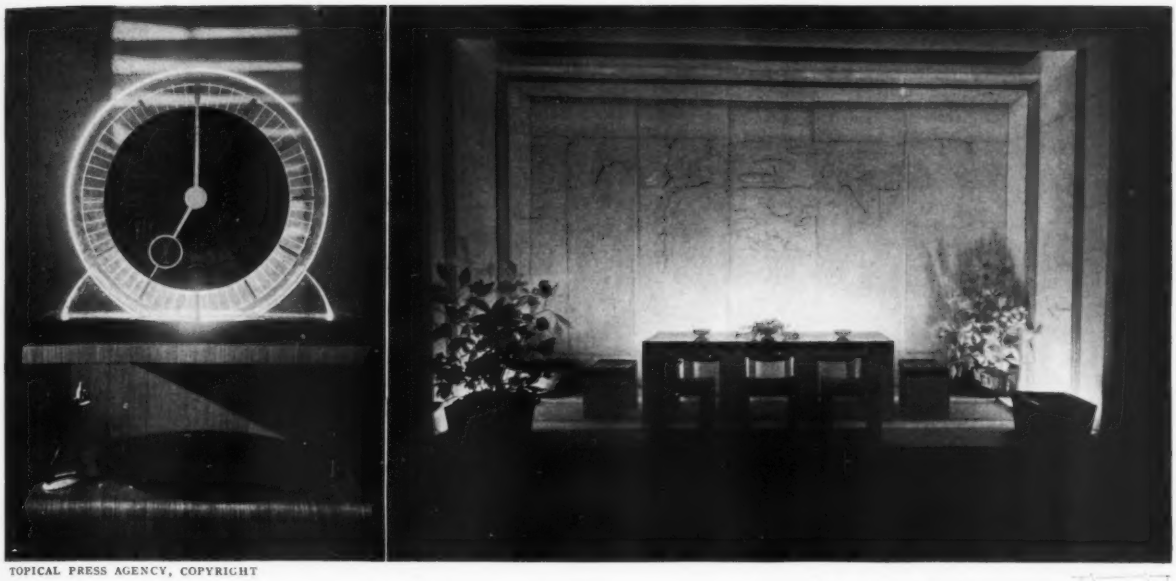
ROBSON & MARSDEN

Trends and Topics of

• Current activity in the building industry generally is at a three-year high point, according to a recent statement of Dun & Bradstreet, Inc. The statement indicated that the present building situation was the brightest in five years. Residential building is expected to make a particularly strong upswing during 1935; employment in building construction lines already shows considerable improvement over last year, both in the number of buildings occupied and in the amount of pay rolls. The trend of rentals is upward, real estate values are appreciating and vacancies are said to be decreasing, thereby creating a scarcity of better-class residences. The report said, in part: "With 16,000,000 homes in the United States listed as eligible for repairs, loans, and 5,000,000 new homes required during the next several years to provide for the normal increase in population, which is estimated at three times larger than present new production, the greatest era in building history lies immediately ahead, and in the majority of cities prospects are considered the best discerned in five years."

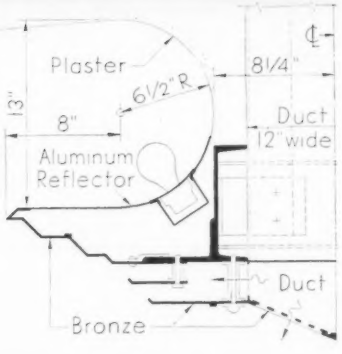
• Tell your clients that they may present applications for insured mortgage loans under FHA terms directly to any of the various insuring offices of the FHA. Administration offices will directly appraise the property, act on the credit responsibility of the borrower, determine eligibility of the mortgage for insurance and, if necessary, assist the borrower to find an approved financial institution willing to make the loan. For this service the usual appraisal fee is charged. This is $3 per $1,000 of the principal amount of the mortgage loan.

• Invisible light may soon become a commonplace in domestic electrical installations. A new house in a western state has been equipped with an infra-red

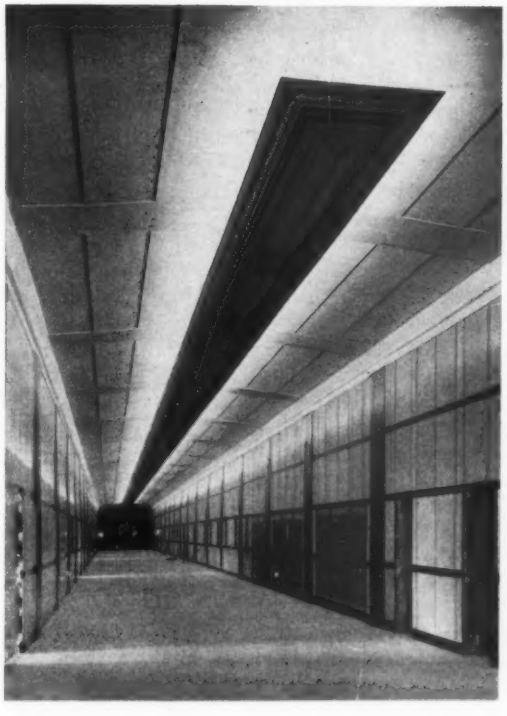


TOPICAL PRESS AGENCY, COPYRIGHT

Above: two displays from the Royal Academy Exhibition of British Art in Industry which closed last month in London. **Left:** a 24-hour clock in etched plate glass, rare woods and white metal. **Right:** garden dining room designed by Oliver Hill, architect. Walls are marble, the pattern being sandblasted in slight relief. **Below:** what is said to be the largest lighting fixture in the world is in the U. S. Post Office at Minneapolis, Minn. The fixture, which also serves as a ventilator, is three hundred and fifty feet long, four feet wide, and weighs sixteen and one-half tons. Material is bronze. For it, the Benson Brass & Chandelier Works fabricated what is reported to be the largest continuous section of bronze ever used



the Times . . .



burglar alarm system which, breaking a telephone circuit, sounds an alarm at a central station. Another circuit, when closed, call the policeman on the beat. The system is hooked up with a trickle-charged battery in case electric service is interrupted.

• Lightweight concrete, said to have only two-thirds the weight, twice the elasticity and three times the insulating value of ordinary concrete, is being used to save 20,000 tons of dead weight in the upper deck of the San Francisco-Oakland Bay Bridge. Obviously there will be a substantial saving in the cost of construction as the weight removed is the equivalent of 500 to 600 gondolas fully loaded. The concrete aggregate is manufactured from a mixture of hard shale and soft clay burned at high temperature, producing an enduring material of light weight, rounded contours and graded sizes. It is being produced at Port Richmond, Cal., and called Gravelite.

(*Continued on page* 104)

Appraisal and Mortgage Service

. . . a field of business for architects which can help stabilize their practice

BY WILLIAM J. PROVOOST, A.I.A.

LACK of stabilization of architectural practice due to the vagaries of general building is one of the most difficult problems faced by every average architect. It was in an attempt to solve this problem in my own practice that I developed what I term an Appraisal and Mortgage service.

Fundamentally, it is not a new idea. A few architects in various parts of the country do render some form of service to financial agencies which lend money on real estate as collateral. It is a field, however, that is susceptible to a more general use of architects' services. And one in which the architect too often has not been a more important factor probably because of his failure to understand the correct approach to the problem.

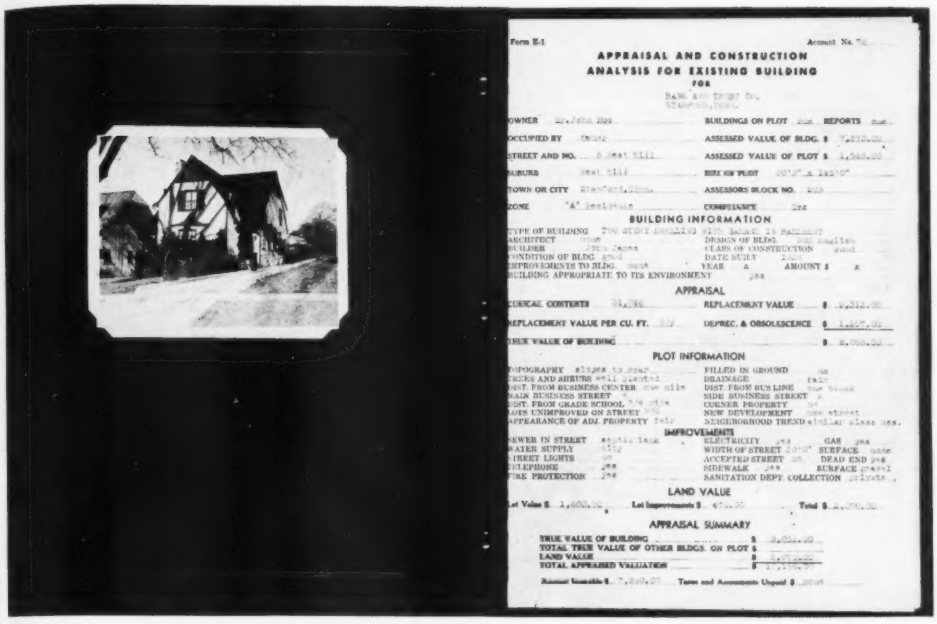
The term Appraisal and Mortgage Service is essentially self-explanatory. It consists of rendering to banks and other financial agencies preliminary and continuing reports on improved real estate upon which loans are advanced. These cover not only the value of the properties at the time loans are made, but also continue to provide the banker with the changing values and conditions of properties from year to year, thus providing for his files a complete and reliable record of the status of his mortgage holdings.

In rendering such a service experience has shown the desirability of printed forms covering the various portions of the service. These include an analysis for an existing building; contemplated building; annual mortgage condition inspection report; building loan subdivision of the contract; and three mortgage loan construction inspection reports. Each report lists the items essential to the presentation of a comprehensive picture and the essential data on each property surveyed. With these reports before him the banker has a true picture of the property and its physical condition. These reports can be used as a reliable basis of judgment as to the margin of safety afforded the investment by the tangible elements. Thus, their value should be obvious.

In practice it has been found convenient to bind these reports in a manuscript cover for the banker's file. In addition to filling out the printed forms which comprise the report there should be included a photograph of the existing building or new building after completion; a plot plan; floor plans and elevations. The drawings should be photostated to a size that will fit the report cover.

TO carry out the service an architect needs little beyond his usual technical knowledge of good construction and planning. Such knowledge of appraisal methods as may be required can be obtained through the reading of any good book on this subject. This knowledge is helpful but not as essential as his specialized technical ability in building construction. Advice on an approach to the establishing of the service is without doubt the thing most needed.

Personal acquaintance with bank officials offers the entering wedge. Before approaching them it is advisable to be well prepared, if possible, with the essential appraisal forms and with sound basic arguments of why this service is better than that commonly employed by the average banking institution.



Form E-1 Account No. [illegible]

APPRAISAL AND CONSTRUCTION
ANALYSIS FOR EXISTING BUILDING
FOR

[illegible]

OWNER [illegible] BUILDINGS ON PLOT [illegible] REPORTS [illegible]
OCCUPIED BY [illegible] ASSESSED VALUE OF BLDG. $ [illegible]
STREET AND NO. [illegible] ASSESSED VALUE OF PLOT $ [illegible]
SUBURB [illegible] SIZE OF PLOT [illegible]
TOWN OR CITY [illegible] ASSESSORS BLOCK NO. [illegible]
ZONE "A" [illegible] COMPLIANCE [illegible]

BUILDING INFORMATION

TYPE OF BUILDING [illegible]
ARCHITECT [illegible] DESIGN OF BLDG. [illegible]
BUILDER [illegible] CLASS OF CONSTRUCTION [illegible]
CONDITION OF BLDG. [illegible] DATE BUILT [illegible]
IMPROVEMENTS TO BLDG. [illegible] YEAR [illegible] AMOUNT $ [illegible]
BUILDING APPROPRIATE TO ITS ENVIRONMENT [illegible]

APPRAISAL

CUBICAL CONTENTS [illegible] REPLACEMENT VALUE $ [illegible]
REPLACEMENT VALUE PER CU. FT. [illegible] DEPREC. & OBSOLESCENCE $ [illegible]
TRUE VALUE OF BUILDING $ [illegible]

PLOT INFORMATION

TOPOGRAPHY [illegible] FILLED IN GROUND [illegible]
TREES AND SHRUBS [illegible] DRAINAGE [illegible]
DIST. FROM BUSINESS CENTER [illegible] DIST. FROM BUS LINE [illegible]
MAIN BUSINESS STREET [illegible] SIDE BUSINESS STREET [illegible]
DIST. FROM GRADE SCHOOL [illegible] CORNER PROPERTY [illegible]
LOTS UNIMPROVED ON STREET [illegible] NEW DEVELOPMENT [illegible]
APPEARANCE OF ADJ. PROPERTY [illegible] NEIGHBORHOOD TREND [illegible]

IMPROVEMENTS

SEWER IN STREET [illegible] ELECTRICITY [illegible] GAS [illegible]
WATER SUPPLY [illegible] WIDTH OF STREET [illegible] SURFACE [illegible]
STREET LIGHTS [illegible] ACCEPTED STREET [illegible] DEAD END [illegible]
TELEPHONE [illegible] SIDEWALK [illegible] SURFACE [illegible]
FIRE PROTECTION [illegible] SANITATION DEPT. COLLECTION [illegible]

LAND VALUE

Lot Value $ [illegible] Lot Improvements $ [illegible] Total $ [illegible]

APPRAISAL SUMMARY

TRUE VALUE OF BUILDING $ [illegible]
TOTAL TRUE VALUE OF OTHER BLDGS. ON PLOT $ [illegible]
LAND VALUE $ [illegible]
TOTAL APPRAISED VALUATION $ [illegible]

Annual Income $ [illegible] Taxes and Assessments Unpaid $ [illegible]

Accurate information on physical condition and replacement value of mortgaged properties is essential to any lending institution. As compiled by an architect it can be trustworthy and very valuable

Experience has shown the advantage of assuming a listening attitude and encouraging the banker to first explain his own appraisal system. One's tactful approach will of necessity be contingent upon what the banker estimates as the good or weak features of his own system. A proper approach will often result in a banker's enthusiasm for the completeness of the service the architect can render.

THE chief argument for the architect's method rests on the completeness of his report, his systematic continuing service, and his fitness for rendering the service better than anyone else.

The most serious handicap in developing a clientele is the belief on the part of bankers that they already have an adequate appraisal system. If they do not have a sound method this fact must be tactfully made clear. They must be made to view the problem from a broad point of view and acknowledge the value of an unbiased advisor. It is also essential to point out the advantage of giving each mortgage co-operative assistance in maintenance problems and at the same time provide the bank with a complete record of the status of every mortgage holding.

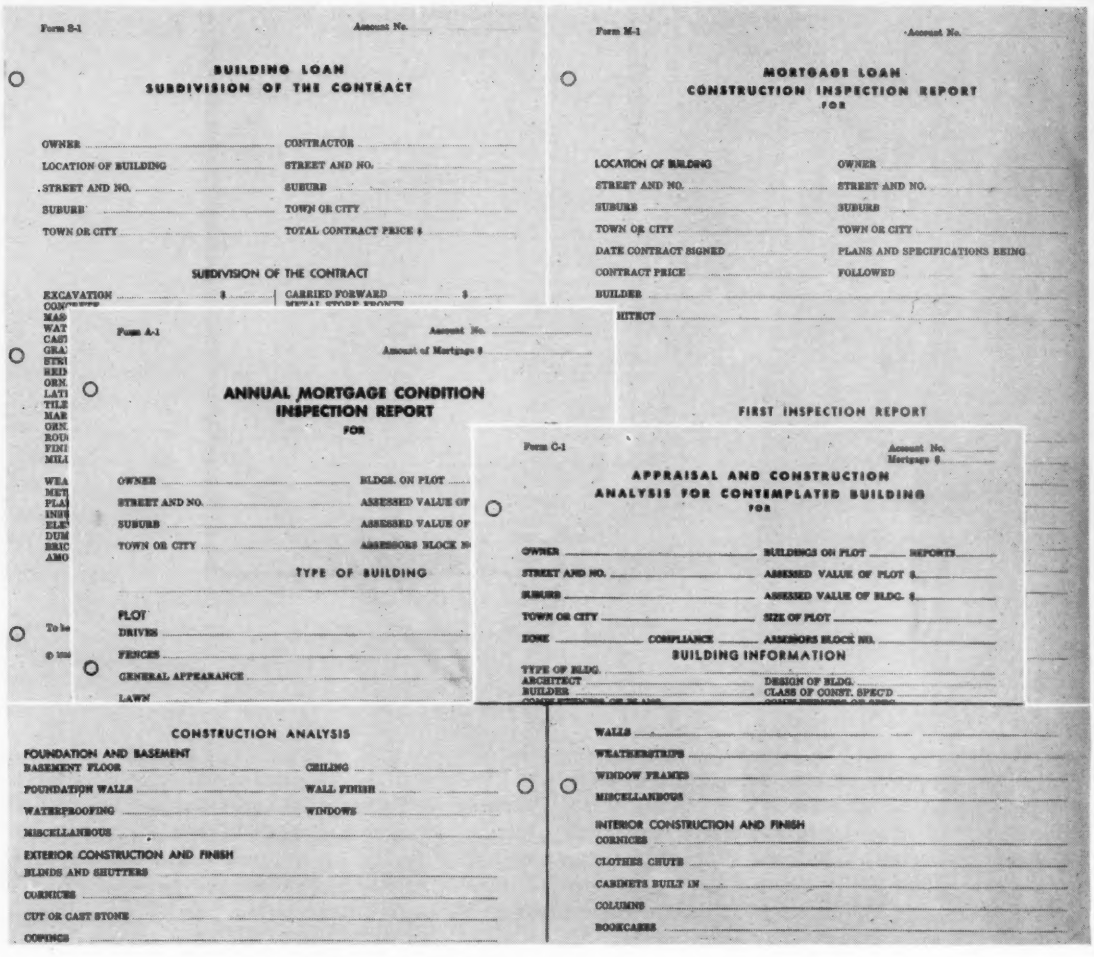
Whether or not an architect should render the appraisal and mortgage service to more than one institution will depend upon local conditions. Familiarity with these conditions should enable him to determine the preferred bank or banks. It is possible that one institution has a volume of investments that will require all the time that he can afford to give. On the other hand, it may be advisable for him to render the service to several institutions.

It is inadvisable to endeavor to build up a larger clientele in the appraisal and mortgage service field than an architect can handle in normal times in connection with his usual practice. In gauging this, it may be estimated that one can personally handle from 500 to 1000 inspections a year. The local banking situation may indicate the advisability of offering the largest institution an exclusive service.

Reports on new buildings can usually be covered in three inspections. Existing buildings should be inspected every year or at not more than two year intervals. In general the inspection of a house rarely requires more than one hour in the field; making possible five or six inspections per day. In addition to this some time is required in the office to fill out and complete the reports.

Remuneration for the service may vary within reasonable limits depending upon local conditions. It has been found reasonable to expect a fee of at least $40 for making an appraisal and construction analysis of an existing building up to 50,000 cubic feet in size, and $30 for a similar analysis of the plans of a comparable contemplated building. Inspection fees for small buildings should not be less than $8 when made annually or $10 if made every two years. Supervision reports of buildings under construction should be not less than $10 for each visit; three visits usually being sufficient. The fee basis is believed to be the best method of charging for this service, and will result in the architect retaining his professional standing with his client.

Throughout the United States there has grown



Form S-1 Account No.

BUILDING LOAN
SUBDIVISION OF THE CONTRACT

OWNER ..... CONTRACTOR .....
LOCATION OF BUILDING ..... STREET AND NO. .....
STREET AND NO. ..... SUBURB .....
SUBURB ..... TOWN OR CITY .....
TOWN OR CITY ..... TOTAL CONTRACT PRICE $ .....

SUBDIVISION OF THE CONTRACT

EXCAVATION ..... $ ..... | CARRIED FORWARD ..... $ .....

Form M-1 Account No.

MORTGAGE LOAN
CONSTRUCTION INSPECTION REPORT
FOR

LOCATION OF BUILDING ..... OWNER .....
STREET AND NO. ..... STREET AND NO. .....
SUBURB ..... SUBURB .....
TOWN OR CITY ..... TOWN OR CITY .....
DATE CONTRACT SIGNED ..... PLANS AND SPECIFICATIONS BEING
CONTRACT PRICE ..... FOLLOWED
BUILDER .....
ARCHITECT .....

Form A-1 Account No. .....
Amount of Mortgage $ .....

ANNUAL MORTGAGE CONDITION
INSPECTION REPORT
FOR

FIRST INSPECTION REPORT

OWNER ..... BLDGS. ON PLOT .....
STREET AND NO. ..... ASSESSED VALUE OF
SUBURB ..... ASSESSED VALUE OF
TOWN OR CITY ..... ASSESSORS BLOCK NO

TYPE OF BUILDING

PLOT
DRIVES .....
FENCES .....
GENERAL APPEARANCE .....
LAWN .....

Form C-1 Account No. .....
Mortgage $ .....

APPRAISAL AND CONSTRUCTION
ANALYSIS FOR CONTEMPLATED BUILDING
FOR

OWNER ..... BUILDINGS ON PLOT ..... REPORTS .....
STREET AND NO. ..... ASSESSED VALUE OF PLOT $ .....
SUBURB ..... ASSESSED VALUE OF BLDG. $ .....
TOWN OR CITY ..... SIZE OF PLOT .....
ZONE ..... COMPLIANCE ..... ASSESSORS BLOCK NO. .....

BUILDING INFORMATION

TYPE OF BLDG. .....
ARCHITECT ..... DESIGN OF BLDG. .....
BUILDER ..... CLASS OF CONST. SPEC'D .....

CONSTRUCTION ANALYSIS

FOUNDATION AND BASEMENT
BASEMENT FLOOR ..... CEILING .....
FOUNDATION WALLS ..... WALL FINISH .....
WATERPROOFING ..... WINDOWS .....
MISCELLANEOUS .....

EXTERIOR CONSTRUCTION AND FINISH
BLINDS AND SHUTTERS .....
CORNICES .....
CUT OR CAST STONE .....
COPINGS .....

WALLS .....
WEATHERSTRIPS .....
WINDOW FRAMES .....
MISCELLANEOUS .....

INTERIOR CONSTRUCTION AND FINISH
CORNICES .....
CLOTHES CHUTE .....
CABINETS BUILT IN .....
COLUMNS .....
BOOKCASES .....

Carefully prepared forms are necessary to give complete information to financial officials subscribing to any type of Appraisal and Mortgage Service

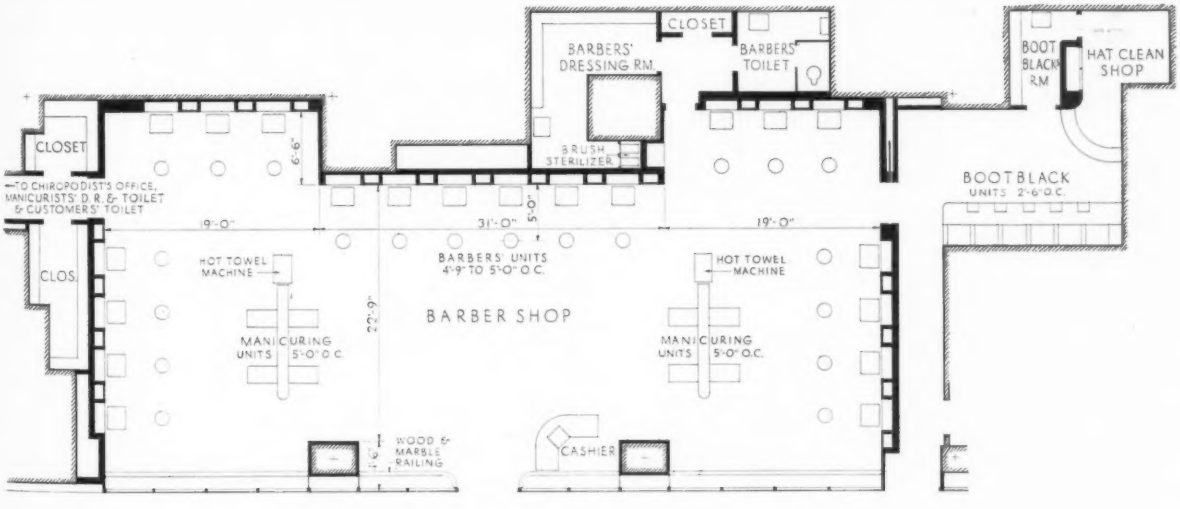
up a big business in building investments. It is based upon the acceptance of improved real estate as safe collateral for investment purposes. The borrower anticipates the repaying of the loan through some form of amortization or his ability to recover his loan if necessary through the sale of the property. To do this means that there must be a margin of safety between the loan and the actual value of the security. While the integrity and responsibility of the borrower are factors to be considered, the ultimate consideration must always lie in the value of the security itself.

Buildings depreciate and become obsolete. Values of buildings like other commodities change with the fluctuation of the dollar and general business conditions. To safeguard any financial investment in buildings, therefore, means that the various factors affecting the value of the security must be watched.

The problem presents two aspects—the value of the security when erected and its continuing value. The first has two considerations—the apparent value as indicated by the plans and specifications for the building, and actual value resulting from compliance with these documents during construction.

Both aspects of building investment are of paramount importance to financial agents. Lacking intimate knowledge of planning, construction and building values, these agents must depend upon the advice of those who have this knowledge.

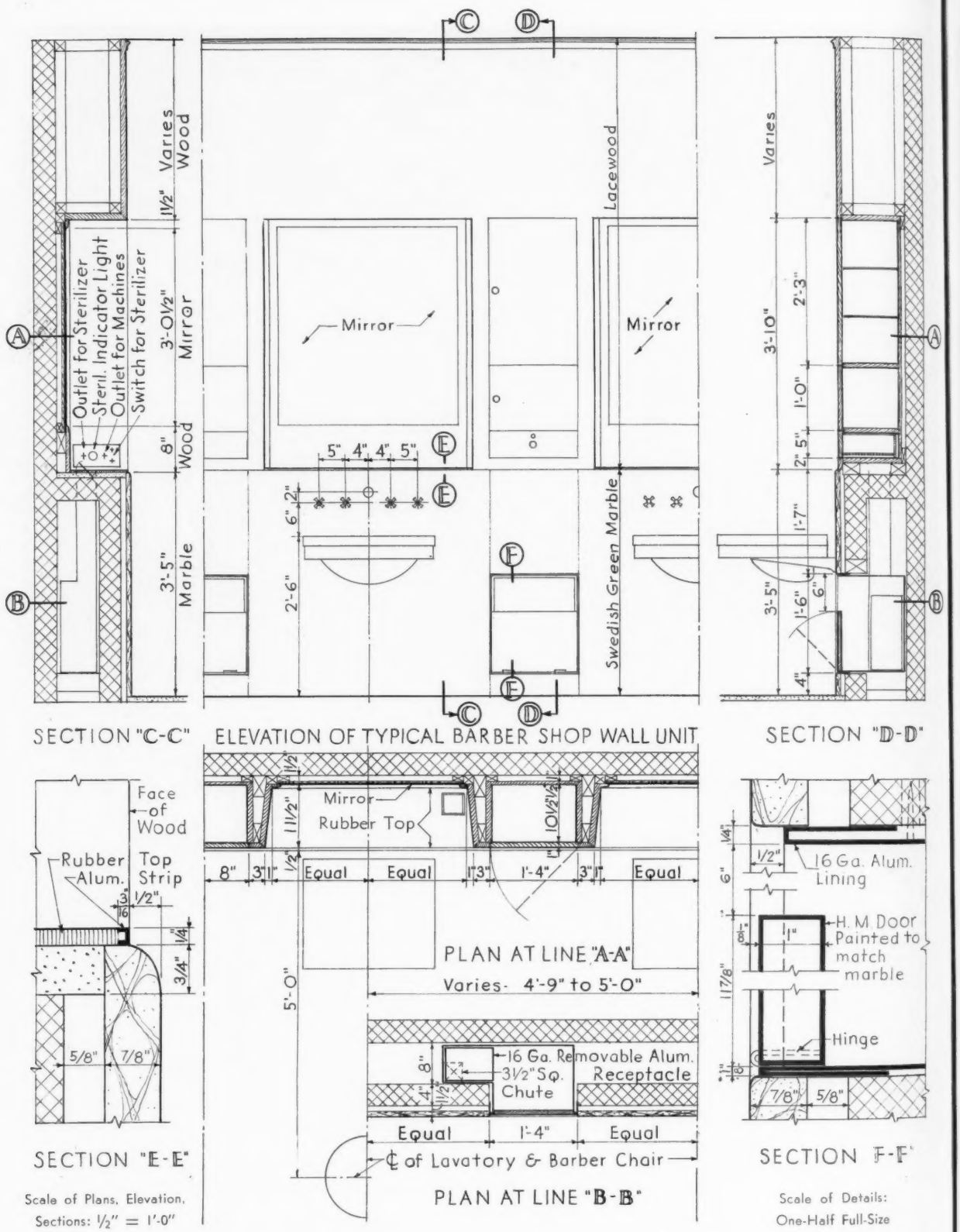
Through the financial phase of building construction architects can develop a service which will take up the slack of dull periods. It is not a major activity nor one which the average office will find profitable by itself. It is a diversification of practice which follows the old advice of not putting all the eggs in one basket. As such it can serve to fill in the ruts and make the practice of architecture a somewhat smoother road to travel.



REINHARD & HOFMEISTER, CORBETT, HARRISON & MAC MURRAY, HOOD & FOUILHOUX, ARCHITECTS

ROCKEFELLER CENTER BARBER SHOP, NEW YORK

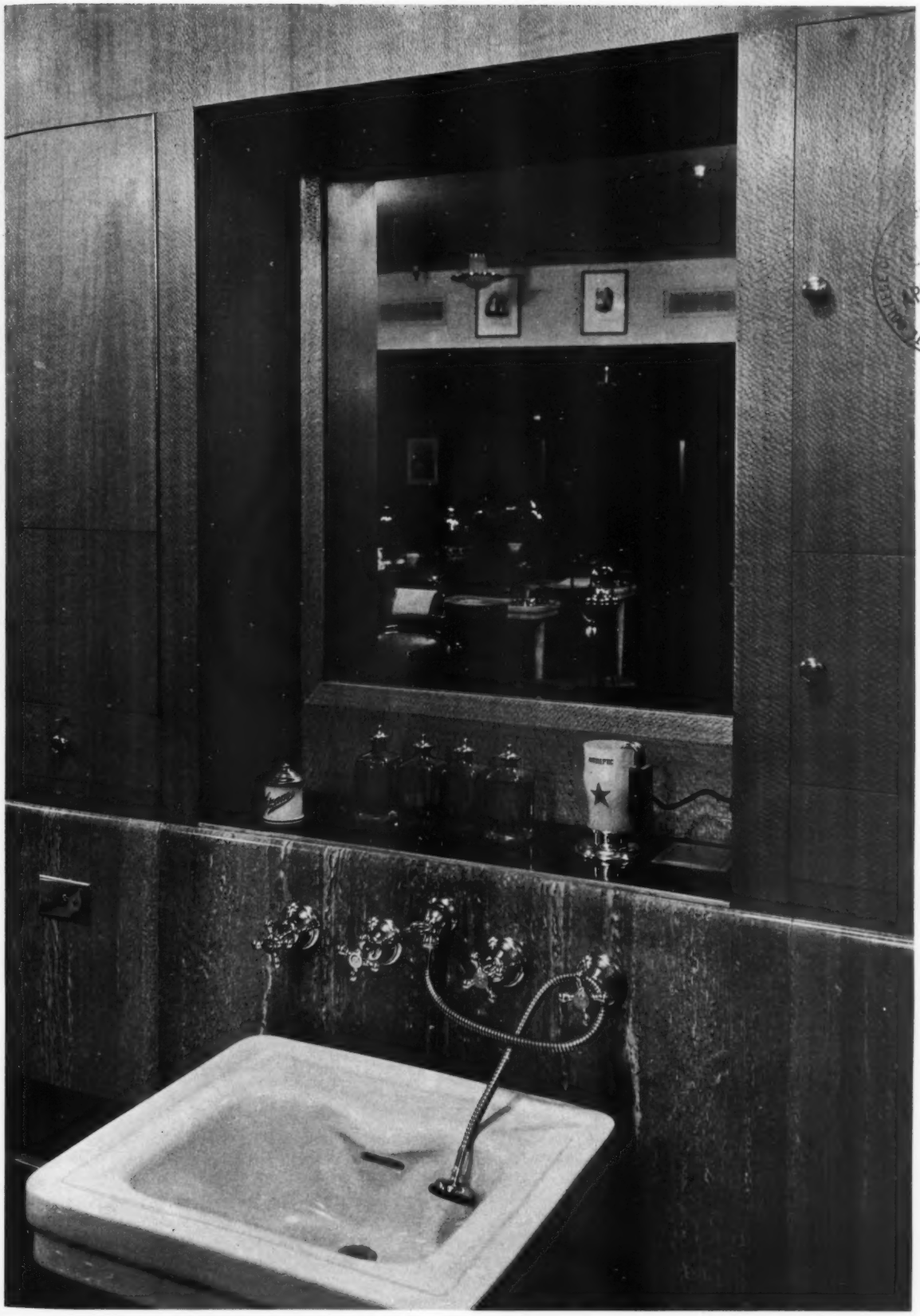
Photographs by Samuel H. Gottscho



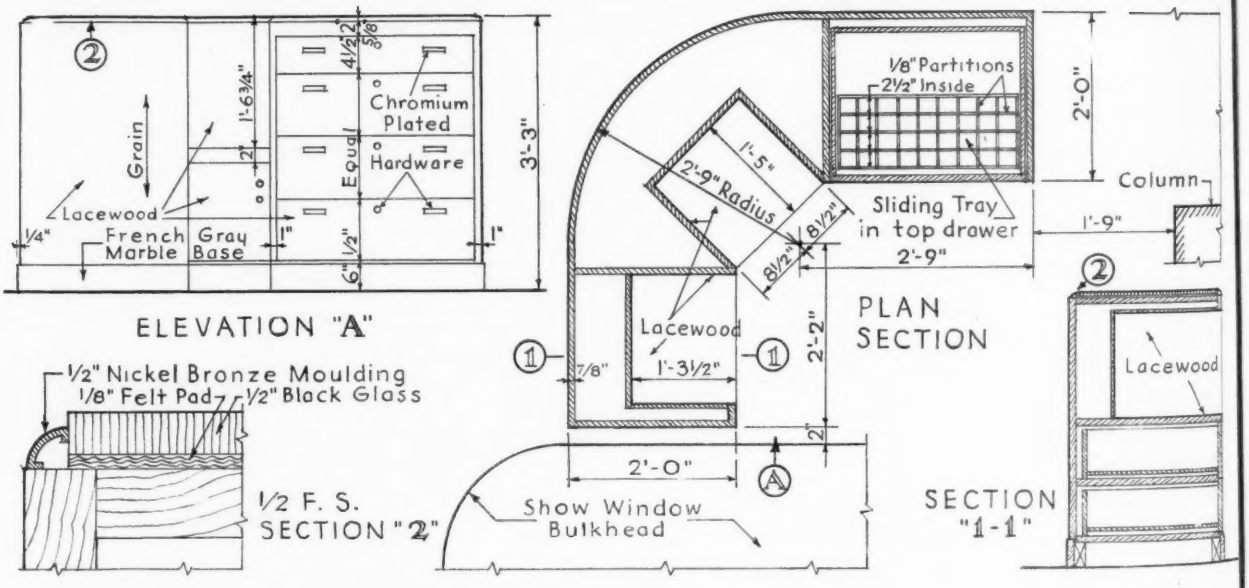
Scale of Plans, Elevation, Sections: ½" = 1'-0"

Scale of Details: One-Half Full-Size

BARBER SHOP, NEW YORK. REINHARD & HOFMEISTER, CORBETT, HARRISON & MAC MURRAY, HOOD & FOUILHOUX, ARCHITECTS



APR 27 1935
MANHATTAN - KANSAS



SCALE OF PLAN, ELEVATION, SECTION: ½"-1'-0". DETAILS ARE ONE-HALF FULL SIZE

BARBER SHOP, NEW YORK, REINHARD & HOFMEISTER, CORBETT, HARRISON & MACMURRAY, HOOD & FOUILHOUX, ARCHITECTS

The Legal Side of Architecture

BY CLINTON H. BLAKE

Blake and Voorhees, Counsellors-at-Law

Architect's Contract Should Cover the Possibility of Abandoning Project

WHAT is the architect's position and what are his rights upon abandonment of a project by the client? These are questions which continually arise and to which many different answers are given, depending on the facts and circumstances in each case. The determination of the court in a case of this kind will depend almost entirely, ordinarily, on the provisions of the contract or understanding between the architect and client.

THE DOCTRINE OF "REASONABLE TIME"

IN a recent decision in New York (Dedona Contracting Corporation v. One Eleven West End Corporation and others, 238 N. Y. App. Div. 708) a contractor instituted action to foreclose a mechanic's lien against property held under lease by the defendent and upon which it had agreed to construct a warehouse. The architect (a corporation) employed by the lessee to prepare the plans for the warehouse, also filed a lien against the property for its fees and was therefore brought in as a party to the suit.

The contract was somewhat unusual. The defendant lessee made an agreement with the architect to prepare the plans and specifications for the building. This agreement provided, in substance, that the architect should be paid the sum of $7,000 for services. Payment of $1,400 of this amount was to be made upon completion of the working drawings and all specifications; $2,800 when the building was inclosed; and $1,400 upon completion of the building issuance of certificates of occupancy. The final balance of $1,400 should be paid sixty days thereafter. The contract further provided that if, for any reason, after the completion of the plans and specifications, the client should abandon the project, the architect should be paid the full $7,000.

After construction had started, work on the building was stopped by the client. Its president, at the trial, testified that the sole reason that the architect had not been paid was because the building had not been completed. In his testimony he gave no fixed time when the work would be resumed or any facts from which such time could be determined. On the contrary, his testimony indicated that the dates when the work might be recommenced or the building completed were entirely conjectural. By the time the case came up for trial, more than a year and ten months had elapsed since the work had stopped.

It was conceded that the architect had prepared the plans and specifications and that they had been approved. It was also conceded that he had performed extra work at an agreed price of $200. He had been paid the sum of $4,650 and there was, therefore, concededly remaining a balance on his fee and extra compensation of $2,550. The defendant claimed that it was not under any obligation to pay this until the completion of the building, whenever that might be. The architect claimed that it had fully performed all of its services with the exception of supervision and certain explanations and instructions with respect to the plans and specifications and that these services were not performed because the defendant had made it impossible to perform them by failing to proceed with the erection of the building. The contract set forth no definite time within which the building should be erected. The architect claimed that a reasonable time would be implied; that the delay which had taken place was more than a reasonable time; and that he should therefore be entitled to recover the full balance of $2,550.

The court in its decision said: "The owner agreed that if for any reason after the plans and specifications were fully completed it should abandon the project, it would pay the architect the full amount of $7,000; that if the project be abandoned by the owner while the plans were in progress, the architect would be entitled to a fee commensurate with the amount of work actually performed. There is no complaint made by respondent as to the skill or quality of the services rendered by the architect, or

that it failed or omitted to properly perform the various kinds of services required under the agreement, except to attend the building site during construction, which was made impossible by the respondent's admitted failure to proceed with the work.

"More than a reasonable time has elapsed for the respondent to proceed with the construction of this building, and under the authority of Weisberg v. Art Work Shop (supra), the appellant is entitled to judgment for the full amount due on the contract."

The case of Weisberg v. Art Work Shop, referred to by the court in its decision, was another New York case in which the plaintiffs, who were engineers, sued to recover a balance claimed to be due them under a contract to furnish plans and specifications and perform other services in connection with the erection and equipment of a plant.

In that case the defendant, after the equipment and materials had been ordered and delivered, postponed the installation of the equipment, refused to set any date when the work would be proceeded with and claimed that it was a question of fact (determinable by a jury) rather than a question of law (to be determined by the court and not the jury) whether a reasonable time had elapsed.

The court in its decision in that case said: "Here these engineers did all their preliminary work and placed the contracts which they were called upon to place for the defendant. They were prevented from going ahead with their work by the arbitrary refusal of the defendant to proceed with the erection of the plant. The defendant's position was that it would not proceed until it got ready to do so and it would give the plaintiffs no information as to when that would be. This, coupled with the long delay, constituted, as a matter of law, unreasonable failure to proceed."

TYPE OF AGREEMENT IS CONTROLLING FACTOR

THE agreement in the Dedona case was unusual, not only with respect to the amount of and the time for making the installment payments, but especially with respect to the provision and if, after completion of the plans and specifications, the project should be for any reason abandoned, the architect should be paid the full compensation agreed upon. This apparently was the determining factor in the decision in the case. The parties, having definitely agreed that the whole amount should be payable if the project were abandoned, the finding of the court that the architect was entitled to be paid the balance of the full amount upon the abandonment of the project necessarily followed. If a shorter time had elapsed, or if the defendant had set some definite date within reason when the project would be proceeded with, there would have undoubtedly been a different result.

The provision as to abandonment in this contract is in sharp contrast to the provision in the standard A. I. A. contract with respect to the postponement or abandonment of the work. Under the A. I. A. form of contract the rule of "reasonable time" would still be applied in determining whether the project has been abandoned. Assuming that it has been abandoned, the architect's rights under the A. I. A. contract are quite different from the rights of the architect in the Dedona case. In a case based on the A. I. A. contract, the courts would follow its provisions and would merely grant the architect a recovery of that portion of his fee earned up to the time of the abandonment. In other words, in the Dedona case the contract contemplates that the architect shall be paid a full fee if the work is abandoned, whereas in the A. I. A. contract the right of the owner to abandon the work without the payment of more than a proportionate amount of the fee is clearly recognized. The parties have a right to make such reasonable agreements as they may wish as to their respective rights in case the work is abandoned or postponed. The courts will give effect to these agreements in determining the right of the architect to compensation and the liability of the owner to make payment thereof.

It is essential, therefore, in any agreement for architectural services that the clause with respect to abandonment of the work be carefully considered and phrased so that it may express, without ambiguity, the intention of the contracting parties. I shall probably have occasion to discuss some angles of the A. I. A. form of contract on this point in a later article.

The Béguinage, Bruges, Belgium

BY HARRY L. TASKEY

LIBRARY
MANHATTA

Waterproofing and Dampproofing

SAFEGUARDS available to architects in this field
WHY guarantees seldom protect owner or architect
WATER-TIGHT concrete construction with standard materials
MEMBRANE, "hydrolithic" and chemical waterproofing methods
HOW to specify weather-tight masonry walls above grade
TYPES of mortar for weather-resisting brickwork
FURRING versus bituminous dampproofing
FLASHING materials and where to use them
REMEDIAL waterproofing methods for existing substructures
CORRECTING wet walls and leakage above grade

AMERICAN ARCHITECT
REFERENCE DATA
NUMBER 17 • APRIL, 1935

Waterproofing and Dampproofing

AMERICAN ARCHITECT REFERENCE DATA
No. 17 April, 1935

By TYLER STEWART ROGERS, Technical Editor*

THE truth about practical waterproofing and dampproofing methods and materials is of utmost importance to every practicing architect. An unnecessarily large number of buildings now standing, ranging from small dwellings to great skyscrapers, leak badly. Are these leaks to be blamed upon the architect or builder; upon design or execution; upon material or workmanship? Are the hundreds of patented panaceas mostly worthless, as some authorities claim, or positive cures, as their producers assert?

The truth is difficult to discover. Many trained investigators have studied one aspect or another of the subject; few or none have had the opportunity to work so broadly as to embrace all factors. There is no unanimity of opinion among authorities on some important questions, though recently there has been a general agreement as to causes. Commercial interests and jealousies have added to the confusion.

Any architect seeking facts in this field must exercise judgment in reconciling the differences of opinion that exist among research authorities. He must weigh the value and significance of reports by investigators whose findings are not in agreement because their work approached the problem from different angles. He must evaluate the worth of laboratory tests in terms of their relation to actual field conditions.

This article presents an unbiased analysis of present-day knowledge, gives facts upon which authorities are in agreement and reports the recommendations of two or more different schools of thought where accepted authorities differ. Where the findings of research men are negative or indecisive, or are contrary to field experience, the facts are reported and no discussion is attempted. By this process of selection and elimination the subject can be simplified and much of the data given practical value.

THESE FACTS can be stated unequivocally: that well established principles of design and construction and standard materials obtainable without paying any premium can be made to produce water-tight masonry below grade and dampproof construction above grade in the great majority of projects. That in spite of all known precautions some leaky conditions may develop after the building is completed; the subject is not a precise science and some contributing factors apparently have not yet been identified. That supplementary waterproofing and dampproofing materials and methods offer valuable means of insuring satisfactory results in new buildings and of remedying failures. That when completed buildings develop wet walls the most practicable methods of dampproofing involve (at least, in part) repeating work at high expense that should have been done correctly during construction at normal cost. That most failures today can be attributed to lack of knowledge of the importance of simple steps in standard building procedures or to lack of adherence to good practice in an effort to cheapen or speed up construction.

SAFEGUARDS AND GUARANTEES

SO long as the architect adheres to standard materials, well recognized construction practices, good design and good workmanship, he is on safe ground and can anticipate satisfactory results in the majority of his projects. Established waterproofing and dampproofing procedures offer him further security. When he enters the field of proprietary compounds he must discriminate shrewdly. Many of these have become "standard practice" through long and successful use; but when any of them are promoted as panaceas and "cure-alls" caution is required. Unfortunately there is a strong odor of patent medicine quackery in some divisions of the waterproofing and dampproofing industry.

Guarantees in this field should be carefully scruti-

*See sources of data and references at end of this article.

nized as they may be offered alike by organizations of the highest integrity or of no integrity whatever. It is unreasonable to expect the manufacturer of any material to assume responsibility for the use of his product by others over whom he has no control. If, to eliminate this difficulty, the manufacturer employs field superintendents to supervise the use of his product or contracts for its actual application, he remains subject to the hazards of improper design and other factors beyond the scope of his work. Guarantees are often cleverly worded to break down sales resistance but are unenforceable in practice because they seldom fail to contain clauses that release the contracting party from responsibility beyond supplying specified materials or installing them according to specified practices.

These facts may well be impressed upon clients who seek short cuts and chance economies. The architect is well advised to insist upon the use of materials made by reputable manufacturers and in exact accordance with their recommendations, to select contractors for this type of work of wide experience and thorough reliability and to provide expert field supervision of their work.

The subject will be treated in four sections: (1) constructing water-tight masonry below grade or otherwise subject to hydrostatic pressures; (2) constructing weather-resistant masonry above grade; (3) remedial waterproofing methods; and (4) remedial dampproofing methods. The first two parts pertain to new construction; the second two to correcting unsatisfactory conditions in existing buildings. The term waterproofing is here used to connote the production or treatment of masonry to make it impermeable to water under pressure. Dampproofing here connotes the processes which make masonry superstructures resistant to damage by rain and frost.

Waterproofing—New Construction . . .

WATER passes through masonry when the pressure behind it is great enough to overcome the frictional resistance of channels within the material. It follows the path of least resistance. Cracks are the worst offenders as they form continuous channels of little resistance. Hollow spaces within walls, such as stone-pockets formed by the segregation of materials in mass concrete, reduce resistance to water pressure at such points and are often troublesome because they may not be visible on either surface. Porosity causes leaks by forming capillary passages through which water may penetrate. Permeability due to this cause is related both to masonry thickness and hydrostatic pressure; that is, under the same pressure a thick wall of given porosity may not leak while a thin wall of identical texture may leak copiously.

These accepted practices are open to selection: One is to make the masonry inherently water-tight in itself, as may be done with mass or reinforced concrete not subject to vibration or cracking. A second is to employ a waterproof membrane supported by masonry against the hydrostatic pressures it must resist. The third is to provide an impermeable surface capable of withstanding prevailing pressures.

DESIGN

ALL substructures, such as foundation walls and floors enclosing basements, are subject to hydrostatic pressure except where rainfall is slight and where subsoil water is artificially or naturally drained away faster than it can accumulate. The first essential in design is therefore to eliminate hydrostatic pressure so far as site conditions will permit, by proper drainage that will keep the ground water level below the basement level at all times. Where this cannot be done the walls and slabs in contact with earth must be structurally designed to resist whatever pressure may develop regardless of the waterproofing method employed.

The enormous pressures that may be encountered in deep foundations are indicated in Table 1. The

TABLE I—IMPORTANCE OF HYDROSTATIC PRESSURE IN DESIGN OF WATERTIGHT MASONRY

Hydrostatic Head, in ft.	Pressure Lbs. per sq. in.	Lifting pressure per sq. ft. under floor	Thickness of mass concrete (without reinforcement) to balance lifting force*	Average pressure per sq. ft. on Wall Surface affected, in lbs.
1	0.43	62.5	5″	31.2
2	0.86	125.0	10″	62.5
3	1.30	187.5	15″	93.7
4	1.73	250.0	20″	125.0
5	2.17	312.5	25″	156.2
10	4.34	625.0	4′ 2″	312.2
15	6.51	937.5	6′ 3″	468.7
20	8.68	1250.0	8′ 4″	625.0
40	17.36	2500.0	16′ 8″	1250.0
80	34.72	5000.0	33′ 4″	2500.0
100	43.40	6250.0	41′ 8″	3125.0

*Estimated on basis of concrete weighing 150 lbs. per cu. ft.

fourth column translates these pressures in terms of the thickness of unreinforced mass concrete required to balance the lifting force operating against floor slabs. Obviously, very heavy reinforcement is required in many instances to reduce slab thickness and cost within practical bounds.

It is possible to secure water-tight concrete without special waterproofing systems if ideal conditions prevail, as will be noted shortly. Since ideal conditions may not be secured in the field practically no building of importance should be designed without proper provision for effective waterproofing by one of the methods explained below.

IMPERMEABLE CONCRETE

IN Table 2 will be found a condensed summary of standard procedure for making water-tight mass or reinforced concrete, based on practices recommended by the Portland Cement Association. Note the statement that no admixtures are needed if these directions are followed, and that none will prove effective if the directions are not followed.

Certainly "waterproof" cement, or concrete containing admixtures, cannot assure water-tightness of the finished masonry if there are cracks, stone pockets, porous areas or poor junctures of hardened work with the next day's pouring. To the extent that these admixtures or integral waterproofings lead one to believe impermeable construction will *automatically* follow their use, they are harmful. To the extent that they improve workability or density of poorly designed, unbalanced and harsh mixtures and perhaps offset slight carelessness of workmanship, some types have proved to be helpful. But they are not substitutes for good workmanship, they do not diminish the need for careful supervision, they do not simplify procedure or reduce cost.

Since these recommended practices (Table 2) are normal and require nothing more than skill and care, architects may best protect themselves and their clients by selecting contractors of known reliability and experience and by expert supervision.

SPECIAL CEMENTS AND ADMIXTURES

NEVERTHELESS, certain materials have come into use in the production of water-tight concrete. Field experience and the exigencies of modern construction, more than laboratory tests and theories, seem to be responsible for the growing use of admixtures. High-early strength cements are gaining popularity in the production of impermeable concrete for practical reasons. The subject is controversial: the following data therefore report various schools of thought.

*Numbers refer to sources listed at end of article. Only one source is referred to on each major point, but usually there are several authorities for each statement. The source chosen is the one which is most clear on the point in question.

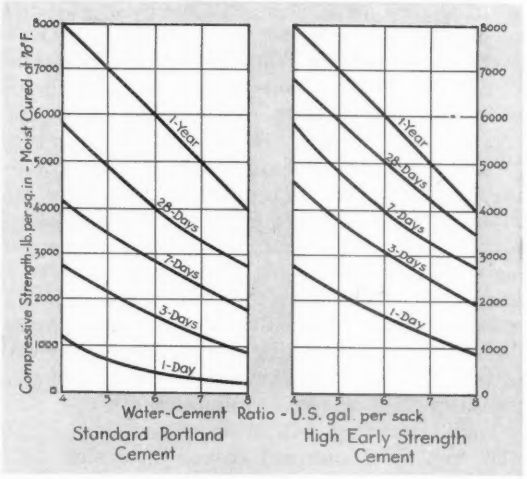


Figure 1 . . . High-early strength cements acquire strength more rapidly than standard portland cements and thus may reduce curing time. Ultimate strengths are the same.

High-early strength cements are ground much finer than the normal commercial portland cements. They acquire in one to three days approximately the same compressive strength as ordinary concrete in 7 days, and in 7 days they have the strength usually developed by normal concrete in 28 days. At the end of a year the strengths are approximately the same. See Figure 1. The higher percentage of fine material also increases the plasticity of high-early strength cements and may permit the use of slightly more aggregate than ordinary cement with the same water-cement ratio. It should be borne in mind that "less water makes better concrete." Most of the pores formed in concrete are voids left by the evaporation of excess water. Only a small part of the water required for plasticity is needed by the cement itself.

Less curing time is required with high-early strength cements than with standard cements, (48 hours is considered sufficient by some producers) but wherever possible advantage should be taken of the greater strength and density resulting from protracted curing. No other departure from practices recommended in Table 2 should be permitted.

Integral waterproofers of chemical type are available in a wide range of compositions. According to laboratory tests proprietary compounds and chemical admixtures show a very wide variation in performance, even among products of substantially similar nature.[1]* Trade names are not revealed in these tests, and frequently manufacturers conceal the chemical nature of their products; the architect is thus dependent to a considerable extent upon the integrity and reliability of the manufacturer in his choice of brands.

Metallic soaps or stearates, notably calcium stearate and ammonium stearate, are available either as ad-

TABLE 2—HOW TO SECURE WATER-TIGHT CONCRETE

"Water-tight concrete can be made with portland cement **without special materials** by following the simple directions given here. Furthermore, water-tight concrete cannot be made if these directions are not followed, regardless of what special materials may be used." Except from "Design and Control of Concrete Mixtures," Portland Cement Association. The following data are based directly upon the instructions referred to in this excerpt, with some additions.

DESIGN: Wall or slab thickness and reinforcement must be adequate to resist all loads, including hydrostatic pressures, and any potential vibration, unequal settlement and temperature or shrinkage stresses. *Concrete that cracks cannot be water-tight!* If there is likelihood of future cracking, provide a flexible waterproof membrane.

AGGREGATES: Shall be clean, sound and of low porosity. The grading of aggregates should be such as to produce a workable, plastic mix when used with the specified water-cement paste in approximately the proportions hereinafter indicated.

WATER: Shall be suitable for drinking.

CEMENT: Shall conform to the Standard Specifications and Tests for Portland Cement (Serial Designation: C9-30) of the American Society for Testing Materials. (For high-early strength cements see "Tentative Specification for High-Early Strength Portland Cement," C74-30T, A.S.T.M.)

WATER-CEMENT RATIO: Shall not exceed 6 gallons per sack of cement for thin and average sections, nor 7 gallons for large masses of concrete, as indicated below. In all cases the water or free moisture in the aggregate is a part of the total water permissible.

WATER CEMENT RATIO:
U. S. GALLONS PER SACK CEMENT

EXPOSURE	Water-tight Construction Relatively Thin Sections	Water-tight Construction Heavy Sections
Extreme: Northern U. S.; alternate freezing and thawing in contact with water. Also any exposure to sea and strong sulphate waters	5½	6
Severe: Northern U. S.; alternate freezing and thawing not in continuous contact with water. Moderate Southern climates, exposure to alternate wetting and drying	6	6¾
Moderate: Southern U. S.: exposure to ordinary weather but not continuously in contact with water. Also concrete completely submerged but protected from freezing	6	7 to 7½*
Protected: Ordinary inclosed structural members; concrete below ground and not subject to corrosive ground waters or freezing and thawing	6	7 to 8¼*

*A ratio greater than 7 gals. per sack of cement is not advisable except for very thick sections such as mass concrete dams.

PROPORTIONS OF MIX: Shall be such (by the addition of coarse and fine aggregates to the paste mixed with the water-cement ratio above given) as to produce a plastic, workable mix that can be thoroughly compacted to fill the forms without separation of materials. Usually the fine should be not less than one-third nor more than one-half the total amount of aggregate. Specifications should not seek to define the exact amounts of aggregates used.

TIME OF MIXING: Shall be two minutes or more in standard batch mixers, and in any event long enough to assure uniform coverage of all particles of aggregates with cement paste. Thorough mixing increases uniformity and plasticity and thus facilitates placing.

PLACING OF CONCRETE: Concrete shall be transported and placed without segregation of the materials. Every precaution should be taken to avoid segregation. The concrete should be placed in horizontal layers, spading each layer to get complete compaction and filling of the forms. Work should be closely supervised. This, and the prevention of laitance are vital to water-tightness. Placing should be continuous whenever possible. Use of high frequency vibrators for placing is advantageous as a stiffer mix with a lower water content can be used.

PREVENTION OF LAITANCE: Laitance (appearing as scum) can only form from the presence of excess water, and its presence results in porosity in the same manner as an increase in the water-cement ratio. If laitance appears it must be removed and a dryer batch used in the next layer and consolidated with the wet concrete to absorb the accumulation of water.

BONDING OF INTERRUPTED WORK: Where placing cannot be continuous and the concrete already placed has taken its initial set, the hardened surface shall be chipped to remove all laitance and to expose the aggregate. The surface of the poured concrete may be wire brushed just after it has taken its initial set to remove laitance and expose some of the coarse aggregate as a means of reducing the amount of cleaning and chipping required later. Before starting to pour the new lift or layer wet the hardened concrete for one hour, letting the surface water thus added be absorbed just before starting the next step. A mortar of one part cement and two sand shall then be applied 1 inch thick over the exposed surface and immediately covered with a moderately dry batch of concrete, well spaded into place.

CURING: Shall be continuous for not less than two weeks and for longer periods whenever possible. Exposed surfaces, floors, etc., should be covered as soon as possible after placing the concrete. Thorough curing is one of the most important elements in the production of water-tight concrete. Curing time should be measured at normal temperatures (about 72F) and considerably extended during cold weather in addition to protection of the concrete from freezing at any time. Tanks and reservoirs should not be filled until after the curing period.

mixtures introduced with the gauging water of the concrete mix or as an element in "waterproof" cement. In the latter case calcium stearates are finely ground into the cement itself during manufacture. These materials, plus some other stearates and oleates, are water-repellents. They cause the minute pores in concrete to lose their capillarity or to develop "negative" capillarity. According to some authorities this negative capillarity condition in well made concrete is sufficient to withstand severe hydrostatic pressures encountered in building work.

Calcium chloride, frequently classed as a waterproofing admixture, is primarily an accelerator, hastening the setting of concrete, and an anti-freeze compound and plastic. Insofar as it may help make a more workable mix and a denser concrete it functions as a waterproofing aid, but it is not a water-repellent. The same holds true for other anti-freeze compounds and accelerators, such as aluminum chloride and sodium silicate.

Inert fillers are finely ground materials sometimes used on the theory that they will fill the pores and thus densify concrete. If the pores are formed by the loss of water, as seems to be the case, it is improbable that they function in this way. They may, however, supply a deficiency of extremely fine material, especially with mixtures deficient in cement, but if they take the place of cement paste which normally would fill the interstices they become an undesirable adulterant. Among the products of this kind are diatomaceous earth, powdered talc, certain gelatinous clays and some proprietary materials of unidentified composition.

Other compounds in wide variety are available, but there is too little agreement among independent authorities regarding their value under field conditions to warrant discussion here.

MEMBRANE METHOD

THIS method consists of enclosing the entire substructure in a bituminous water-tight envelope usually composed of alternate layers of hot applied bituminous mop coatings and reinforcing layers or plies of impregnated felt or fabric. The membrane is applied to the water side of the structural masonry.

Materials of various types are used. The bituminous mop coatings may be of asphaltic or coal-tar pitch nature. Authorities do not agree as to the relative merits of these two materials. Both are used and both should be applied hot. Cut back and emulsified bitumens, usually made for cold application in other types of work are unsuited to membrane work as they may deteriorate on continued exposure to water. This has been observed in swimming pools where the lining has blackened or the water discolored by the gradual break-down of an emulsifiable bitumen. The important thing is to select a bitumen of the grade or type suited to this service.

Both felts and woven fabrics are employed to

Figure 2 . . . Membrane waterproofing consisting of plies of fabrics or felts embedded in hot moppings of pitch or asphalt are used wherever vibration, settlement or cracking of masonry may occur

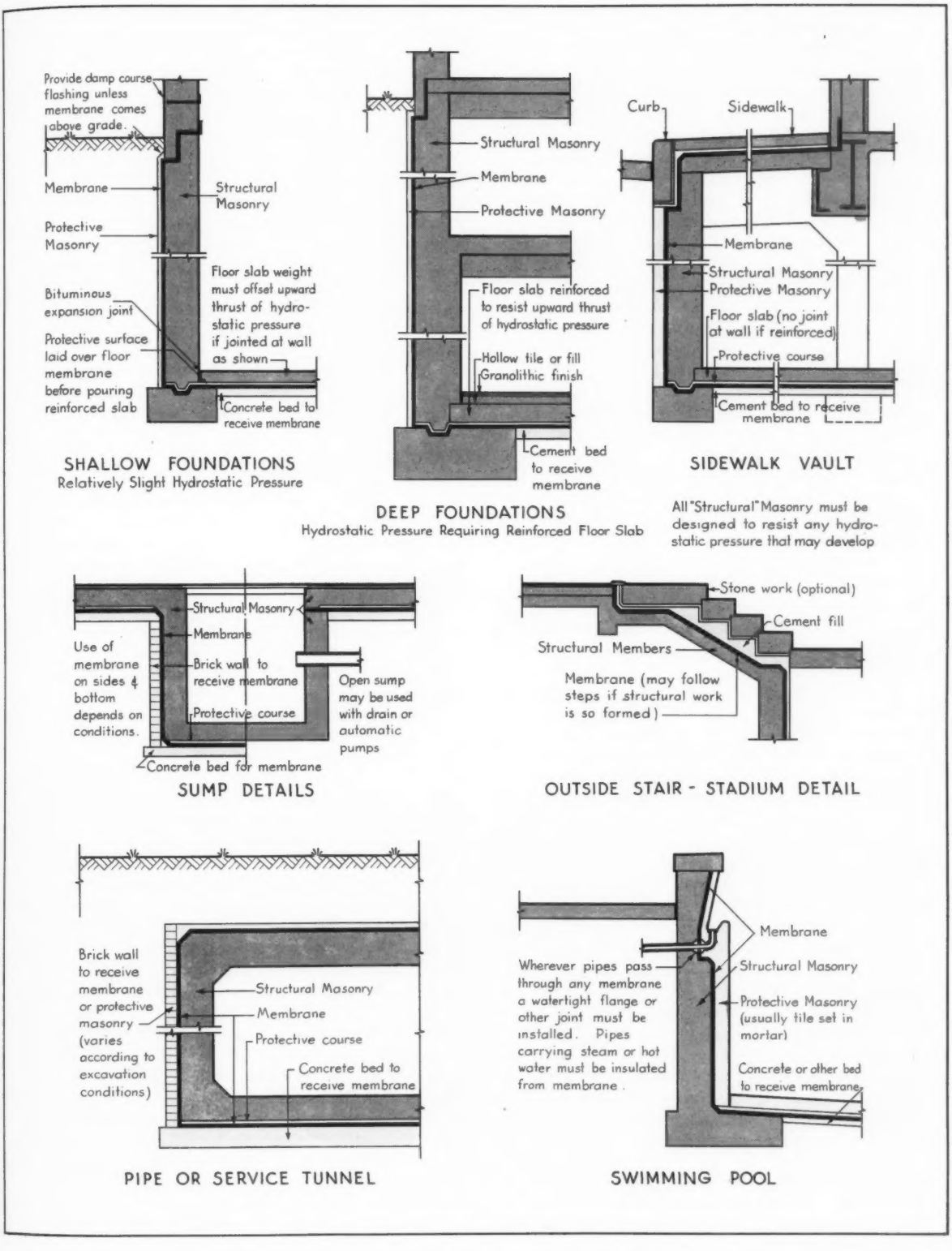

Provide damp course flashing unless membrane comes above grade.
Membrane
Structural Masonry
Protective Masonry
Bituminous expansion joint
Protective surface laid over floor membrane before pouring reinforced slab
Floor slab weight must offset upward thrust of hydrostatic pressure if jointed at wall as shown
Concrete bed to receive membrane
SHALLOW FOUNDATIONS
Relatively Slight Hydrostatic Pressure
Structural Masonry
Membrane
Protective Masonry
Floor slab reinforced to resist upward thrust of hydrostatic pressure
Hollow tile or fill
Granolithic finish
Cement bed to receive membrane
DEEP FOUNDATIONS
Hydrostatic Pressure Requiring Reinforced Floor Slab
Curb
Sidewalk
Membrane
Structural Masonry
Protective Masonry
Floor slab (no joint at wall if reinforced)
Protective course
Cement bed to receive membrane
SIDEWALK VAULT
All "Structural" Masonry must be designed to resist any hydrostatic pressure that may develop
Structural Masonry
Membrane
Use of membrane on sides & bottom depends on conditions.
Brick wall to receive membrane
Protective course
Open sump may be used with drain or automatic pumps
Concrete bed for membrane
SUMP DETAILS
Stone work (optional)
Cement fill
Structural Members
Membrane (may follow steps if structural work is so formed)
OUTSIDE STAIR - STADIUM DETAIL
Brick wall to receive membrane or protective masonry (varies according to excavation conditions)
Structural Masonry
Membrane
Protective course
Concrete bed to receive membrane
PIPE OR SERVICE TUNNEL
Membrane
Wherever pipes pass through any membrane a watertight flange or other joint must be installed. Pipes carrying steam or hot water must be insulated from membrane.
Structural Masonry
Protective Masonry (usually tile set in mortar)
Concrete or other bed to receive membrane
SWIMMING POOL

Figure 3 . . . Common applications of membrane waterproofing showing normal position with respect to water pressure and use of protective course of masonry to prevent injury to envelope during construction. Installation details are omitted in this diagram

build up a satisfactory thickness of membrane to give the membrane sufficient toughness to withstand minor cracking and vibration. Usually two layers of woven fabric are considered the equivalent in toughness of four or five layers of felt. Membrane materials should meet the requirements of the American Society for Testing Materials.

The number of plies which should be used is governed by the hydrostatic pressure to be resisted, and by working conditions. In trenches, footings, pits and where working conditions are difficult, extra plies are frequently used. Additional plies beyond the two to five needed for strength do not make the membrane itself more waterproof, but they do increase the certainty of perfect workmanship.

Sheet copper membrane materials have been introduced recently for use in place of felt or fabric, or in combination with them. These copper sheetings range in weight from one ounce per square foot to one half pound. Some are copper only; others are copper bonded to felts or prepared building papers. The only known laboratory study of metallic membranes is an investigation by the British Building Research Station which is seeking to determine the action of normal and corrosive ground waters on metallic membranes. No conclusions have as yet been reported.

Procedures vary according to job conditions. The application of membrane waterproofings is a highly specialized trade and should always be entrusted to experienced contractors.

In general, the membrane is first laid over the footings with additional lengths left for subsequent bonding with wall and floor membrane. The vertical membranes are sometimes built against a self-supporting brick wall which subsequently acts as exterior protection to the membrane. The concrete wall is cast against this membrane after it has been protected on its inner face with a 1 inch protective coating of cement plaster. Otherwise the wall is cast over the footings and footing membranes turned up and bonded with the exterior membrane after the forms are removed and the concrete properly cured. Floors subject to hydrostatic pressure are always poured last and, of course, the entire excavation must be kept free of water to below the floor grade. A subfloor must be laid to receive the waterproofing. As soon as the membrane has been laid it must be protected by a screed coat to avoid puncturing during the placement of the structural floor slab. Pumping must continue until the floor slab has cured sufficiently to withstand hydrostatic pressure. See Figure 3.

Precautions should be taken to avoid any punctures during installation or after application of the protective coating. This includes precautions to avoid subsequent drilling of the membrane for pipes, lag bolts or any other supplementary work. Avoid turning membrane into sharp angles and provide special details at all expansion joints or where cracking of concrete may shear the membrane. Adequate supervision is necessary to assure proper lapping of courses and thorough embedment of fabric or felt in the layers of hot bitumen.

Conditions under which the membrane method should be employed include: All sidewalks and exposed decks should be membrane waterproofed due to the probability of cracking as the result of vibration and thermal expansion. The membrane system should be employed wherever vibration, shrinkage or other factors may cause cracking and where the development of sudden leaks due to such cracking will cause serious damage before repairs can be made in monolithic or reinforced construction.

BELOW-GRADE "DAMPPROOFING"

THOUGH not strictly a waterproofing procedure under the definitions here used, sub-surface masonry which is not subject to hydrostatic pressure may be "dampproofed" with bituminous paints or hot pitch without any membrane. The function of these treatments is to offset porosity and capillary movement of water from damp earth. The paint method uses two to six coats of cut-back bitumens applied cold. The hot application method uses a brush or spray coating of a primer followed by hot moppings of suitable coal tar pitch or asphalt. These procedures make the wall termite-proof and resistant to deterioration by ground water action, but should not be relied upon to resist hydrostatic pressure.

CEMENT PLASTER COAT METHOD

THE hydrolithic method of waterproofing consists essentially of applying to the inside surface of walls and floor slabs below grade a continuous cement plaster coat, usually ¾ inch to 1 inch in thickness. The mixture is usually one part cement to two parts sand, and is generally integrally waterproofed. The structural masonry surface must be thoroughly cleaned and roughened, and the concrete should be saturated and allowed to surface dry just before proceeding with the work. A cement paste of the consistency of heavy cream, mixed within thirty minutes of use, is applied over a small area and immediately plastered with a ⅜ inch scratch coat of 1:2 mix. As soon as this coat has hardened slightly, it is scratched and finished with a second ⅜-inch coat of similar mortar. This cement plaster coat must be thoroughly cured and during the entire process hydrostatic pressure must be relieved by pumping or other means. Because proper curing conditions are sometimes difficult to obtain in this work, some experienced contractors use high-early strength cements.

This method has been successfully used on very important work and under extremely severe pressure conditions. Its success depends so largely upon highly skilled workmanship and experienced supervision that this method should be entrusted only to specialists or qualified contractors.

IRON METHOD

ANOTHER method of forming an impermeable surface on mass or reinforced concrete employs finely subdivided iron which is carried into the surface pores of the concrete with a chemical which, in the presence of water, completely oxidizes the metal. The iron, upon oxidization in the surface pores, expands, sealing the apertures. Like the cement plaster coat method it has a successful record of experience when properly used and can resist hydrostatic pressures encountered in buildings.

While manufacturers' instructions should be explicitly followed, the usual procedure is to mix the material with water and brush it as a paste into the cleaned and wire-brushed surface. A second coat is then applied, adding portland cement to the iron compound and water. Several coats may be applied in this fashion, using less iron and more cement in each succeeding coat. The final coat often is a neat cement wash to conceal any rusty coloration. When used on floors, this treatment requires a cement wearing course since the iron coatings cannot withstand traffic. Federal specifications require a ¾" cement finish on walls, and a 1" granolithic surface on floors.

Constructing Weather-Resisting Masonry Walls . . .

PRACTICALLY all authorities agree that wet masonry walls above grade and leakage through such walls to the interior are due to the movement of water through microscopic or visible cracks between mortar and brick or stone, and through hollow places formed by the failure to fill the joints solidly with mortar. One of the leading waterproofing contractors of the country has studied over five million square feet of walls requiring correction and has found every conceivable type of brick, stone and masonry mortar used in these walls. The blame apparently does not attach to the brick, whether it be porous, dense or practically impervious (as in the case of enameled brick). It does not attach to the mortar joint itself, whether it be lime, portland cement, masonry cement or any combination of these materials. The chief cause of trouble is an improper relationship between the mortar and the masonry it bonds. Elimination of wet walls and wall leakage, however, is not solely dependent upon this relationship of mortar and masonry, but also depends upon design of the masonry work, formation and thickness of the mortar joint, and correct use of flashings.

Damage resulting from wet walls and leakage takes several forms. Frost action on wet walls frequently causes spalling or even serious structural cracking. Dampness in reinforced concrete walls may cause spalling due either to ice formation or to rusting of the steel reinforcement. Dampness in any masonry may cause efflorescence by dissolving soluble salts in the brick, stone or mortar. These solutions, working toward the surface as the wall dries out, crystallize and not only impair the appearance of the surface but the crystal formation may in itself cause spalling or deterioration of the masonry surface. Where leakage occurs on the inside of the building the extent of the harm may be multiplied by dissatisfied tenants, ruined decorations and unlivable conditions.

It is inevitable that a certain amount of water will enter any masonry wall. Damage results if it stays there long enough to freeze or if it accumulates in volume great enough to penetrate the interior or to bring about excessive and continuous efflorescence. Some authorities feel that porous brick, while admitting relatively large quantities of water through capillary action, will let that water dry out rapidly. A non-absorptive brick will accumulate much less water but that water will dry out less rapidly. This theory is supported by difficulties sometimes encountered with a brick having an impervious enameled face and sides that are somewhat absorptive. Water entering through the mortar joints is taken up by a large part of the brick but can only dry out through the joints; it is retained for long periods, freezes and spalls off the impervious enameling.

BRICK

THE most important quality of brick in relation to weather-tight wall construction is the degree of firing or burning. It is not porosity or hardness as such.[10] A well-burned brick, whether porous or dense is superior to a poorly burned brick. An under-burned brick from one district may actually be less porous (and less able to withstand frost action) than a well-burned brick from a district where the clays normally produce high porosity

though often great durability. For bricks of identical composition, porosity or absorption is a fairly reliable indication of the degree of burning, but bricks from different districts cannot thus be compared. Absorption tests, once used as a basis for accepting or rejecting brick, should no longer be a limiting factor in the specification, but may be used to establish the mortar requirements for any selected brick or to compare the quality of burning among different samples of the same brick.

MORTAR FOR UNIT MASONRY

IT is generally agreed that masonry mortar should possess these five essential qualities:[7]

1. High water retaining capacity. This means the ability of the mortar to hold enough water to remain plastic under the trowel regardless of the absorption of the masonry unit. Only such a mortar will have good workability and facilitate filling of joints, especially the verticals.

2. Bonding power or adhesiveness. This is more important than mere mortar strength, for if a mortar does not bond to the masonry it adds no strength to the wall. Some of the strongest mortars have the poorest bonding power and may produce a weaker masonry structure than a weaker mortar that bonds well. This is not always recognized in building codes.

3. Low volume changes subsequent to hardening. Shrinkage occurs to some degree in all types of mortar, not only when they take their initial set but in some cases by chemical action that continues over a long period of time. To this shrinkage is attributed most of the separation cracking that causes wet or leaking walls. Straight portland cement mortars, for example, shrink considerably over a long period of years,[11] and to a greater degree than a cement and lime mortar.

4. Reasonable strength. (See bonding power) Where building codes demand specified strength and a fixed factor of safety, strength may control selection.

5. Minimum water soluble salts. The presence of water soluble salts in mortar or masonry will not in itself cause efflorescence. Dampness must also be present. But the amount and nature of the efflorescence that may develop under wet wall conditions is related to the quantity of soluble salts put into the wall with the mortar.

From this point on there is less agreement among authorities. The architect must choose from among the types indicated below the mortar composition that appeals to him.

High lime content cement mortars use lime as a cementitious material along with portland cement in equal or greater proportions by volume. Proponents of this type of mortar appear to be gaining ascendancy over low-lime or straight cement mortars, and a considerable number of, though not all, authorities favor its use.

An argument of this school of thought is that by replacing part of the portland cement in the mortar with lime the tendency of portland cement mortar to change volume subsequent to hardening is reduced by a material that is cementitious in itself.

There are slight differences of opinion as to the proportions recommended to meet various conditions of service. Though the industries concerned are constantly debating these differences, they seem to be inconsequential to a neutral observer if a clear distinction is made between the desire for water-resistant walls and for strength of mortar.

Proportions recommended by the National Lime Association are shown in Part A of Table 3. These are appropriate for all types of masonry work regardless of the rate of absorption of the units employed. Thus such mortars may be used without change throughout the wall even when a relatively non-absorptive face brick is backed up by absorptive common brick or hollow tile. No wetting of brick or stone is required summer or winter.

According to quite recent investigations, water retaining capacity of mortar is materially benefited if hydrated lime is made into lime putty and aged at least 12 to 24 hours before use in the mortar. Others recommend slaking quick lime for several days or weeks in accordance with old-time methods instead of using hydrated lime, but the inconvenience of using this practice in major projects does not appear to be offset by an equivalent gain.

Advantages claimed for the 2 lime, 1 cement, 9 sand mortar are: High water retaining capacity; superior plasticity and workability; good bond with brick and stone through a very wide range of absorptiveness; ample strength of completed masonry due to superior bonding power through lime mortars have considerably less inherent strength than straight portland cement mortars; low volume changes subsequent to hardening; good extensibility (somewhat analogous to elasticity but connoting ability to withstand some movement within the wall); relative freedom from soluble sulphates that contribute to efflorescence.

Proportions recommended by the Portland Cement Association are shown in Part B of Table 3. The 1:1:6 ratio is recommended for normal work, whereas the Lime Association recommends this where strength is a major consideration. This difference appears to be due in large part to the emphasis placed by the cement authorities on the need for a mortar strength sufficient to meet commonly prevailing building code requirements. Where such mandatory codes govern, it is obvious that the two groups are in agreement. For still higher mortar strength (without reference to water-tightness) the

TABLE 3 — LIME-CEMENT MORTARS

A. Standard Proportions for All Types of Masonry Units (as recommended by National Lime Association)

	Parts by Volume		
	Lime	Cement	Sand
For all weather-tight unit masonry above grade	2	1	9
Same, richer for increased mortar strength	2	1	7 to 8
For all brick masonry below grade—water-resistance lessened for increased strength.	1	1	6

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B. Mortar Mixes Recommended by the Portland Cement Association

Type of Unit Masonry Structure	Mortar Mix		
	Hyd. Lime cu. ft.	Cement cu. ft.	Sand cu. ft.
Foundations below grade—brick, concrete block or stone	¼	1	3
Load-bearing walls above grade—brick, concrete block or stone	1	1	6
Clay tile	1	1	4
Non-load bearing walls exposed to weather (panel walls)	1	1	6
Non-load bearing walls unexposed to weather	..	..	..
Pointing mortar (new or old work)	¼	1	2½

C. Mortar Mixes Suggested for Different Conditions and Types of Masonry (as proposed by F. O. Anderegg, 1931)

Absorption Rate (% increase in weight in 10 minutes)	Summer						Winter (below 40F)					
	Narrow Joint			Wide Joint			Narrow Joint			Wide Joint		
	L	C	S	L	C	S	L	C	S	L	C	S
High, above 10%	2	1	9	1½	1	7½	1	1	6	1	1½	7
Medium, 5-10%	1½	1	7½	1	1	6	1	1½	7	1	1½	7
Low, 1-5%	1	1	6	1	1	6	1	1½	7	1	2	8
Vitreous, 0-1%	1	1	6	1	1½	7	1	1½	7	1	2	8

Lime: 7-8 cu. ft. of putty per bbl. of quick lime or 4-5 cu. ft. putty per bbl. of hydrate

Cement: 94 lbs. per cu. ft. **Sand:** 80-85 lbs. per cu. ft. loose and moist. All proportions by volume.

Portland Cement Association recommends a volume ratio of ¼ lime: 1 cement: 3 sand.

A few authorities still adhere to the earlier recommendations of Anderegg[12] that the mortar mix be varied according to the absorption ratio of brick expressed as a percentage increase in weight over air-dry condition following immersion flat side down in ⅛ inch of water for ten minutes. These recommendations are shown in Part C of Table 3.

Masonry mortars are largely proprietary compounds of portland cements, modified portland cements, slags, hydraulic limes, natural cements, mixtures of portland cements and natural cements, and mixtures of portland cements and hydrated limes.[13] Manufacturers seldom identify the component elements in their patented mortars or reveal the proportions of each material. In consequence reports of research investigators cannot be related to trademarked products; the architect must rely upon the standing and integrity of the manufacturer and verified evidence that the masonry mortar under consideration has contributed largely to weather-tightness of many structures erected over a reasonable period of years. When a patented mortar has shown satisfactory performance, it offers the advantage over field mixtures of controlled uniformity through proper proportioning during the manufacturing process.

Laboratory tests indicate that masonry mortars as a whole vary over a wide range in their water-retaining capacity, their strength and the extent of volume changes subsequent to hardening. For example, compressive strengths of 41 masonry mortars varied from about 50 lbs. to 3650 lbs. per square inch at 28 days.

Figure 4 . . . Broken section of 8-inch brick wall as laid up by a mason following common practice with a harsh mortar. Unfilled joints form reservoirs in which water may collect, eventually penetrating to the interior

Straight portland cement mortars began to replace the traditional all-lime mortars many years ago when engineers discovered the greater strength of cement mortars and assumed this greater strength made a better wall. Speed of mixing and setting were other factors favored by the pressure to quicken the pace of building.

It is now generally agreed that the usual 1:3 mortar of portland cement and sand is too harsh under the mason's trowel, has very low water retaining capacity, only moderate adhesion, and high volume changes subsequent to hardening. It therefore tends to produce a leaky wall though it does not follow that the use of this mortar causes leaky walls in all cases.

To improve the qualities of portland cement mortars various admixtures or modifiers have come into use. The Portland Cement Association, as noted in Table 4, recommends the employment of lime in combination with cement in what may be called a high lime-cement mortar for ordinary work and a low lime - portland cement mortar for work requiring compressive strength rather than water resistance.

"Waterproof" portland cement mortars are made by the use of "waterproof" cement or admixtures containing stearates of equivalent nature. These materials make the pores of the mortar somewhat water repellent, reducing their capillarity. To a certain degree they increase plasticity of mortar and its water-retaining capacity. They do not of themselves materially affect volume changes subsequent to hardening.

To an impartial observer waterproof portland cement mortars appear to have little advantage over the straight 1:3 cement mortars except for their water repellent characteristic and greater plasticity under the trowel. They produce satisfactory results according to some investigators[12] and are of little or no value according to others.[1] The use of waterproofed portland cement with lime in the same proportions recommended for ordinary cements (Table 3) has much greater support than a 1:3 cement-sand ratio. But as one authority on lime mortars points out, the use of lime provides the requisite plasticity and water retaining capacity so "why paint the lily white?"

MORTAR JOINTS

THE thickness and formation of mortar joints is almost as important as the composition of the mortar. One rule commonly neglected but of manifestly more importance than any other single factor is:

All mortar joints must be completely filled.

The sectional appearance of an 8-inch brick wall laid up by an average mason normally reveals an open space between the facing and backing brick as shown in Figure 4. Reservoirs thus formed can accumulate large volumes of water and only the permanent tightness of mortar around the facing brick keeps them from being filled. If this air space were continuous, as may be deliberately sought in hollow wall construction, and the voids drained to the outside through weep holes, the wall may actually drain out and dry out rapidly and cause no trouble. But if the water pockets are blind they develop sufficient hydrostatic pressure to force the water through the backing brickwork, causing excessive damage on the interior.

The first essential in getting the mason to fill joints properly is to provide him with a plastic mortar of high water-retaining capacity that will slush down into the vertical joints with minimum effort on his part. The second is constant and expert supervision. See Figure 5.

Thickness of joints is important. The standard recommendation among leading authorities is not to exceed one-half inch in joint width. The preferred joint is ⅜ inch thick.

Finish of joints should be given careful consideration. In Figure 6 are shown the common masonry joints in relation to dampproof walls. Types that foster leaking are flush or plain cut, struck, raked and stripped joints. Struck, raked and stripped joints form shelves upon which rain water is driven by wind, giving it a good start toward penetrating any separation cracks that may develop between mortar and masonry. The flush or plain cut joint, not tooled, is more or less torn by the action of the trowel which tends to make the surface rough and

Figure 5 . . . Good workmanship is a vital part of weather-tight masonry. (1) Full mortar beds and thoroughly filled joints are essential. (2) Grooved mortar beds, once considered satisfactory practice, contribute materially to leaky walls. (3) All mortar joints should be thoroughly filled by shoving the brick and by carefully slushing them full with a plastic mortar. (4) At the end of each day's work, wall should be protected against soaking by rains

porous and sometimes to draw the mortar away from the brick at the face of the joint.

Types that minimize leaking are the weathered joint and two types of tooled joints—the V and the concave. These tooled joints are most effective if formed immediately after the mortar has begun to take its initial set. The tooling then compacts the joint without making the surface too dense for proper "breathing." By doing the tooling when the mortar is slightly hardened, the pressure required forces the joint to expand and substantially reduces the likelihood of a separation crack developing in the surface. It also compensates for shrinkage that takes place in all mortars prior to hardening. If the tooling is done when the mortar is fresh it tends to bring water to the surface and form a dense skin without reducing the likelihood of future separation cracking.

DESIGN OF MASONRY

MUCH can be done to assure weather-tightness by proper design of the masonry.

Projecting courses should be eliminated wherever possible. They form shelves upon which water collects. Where they are required by the design they should be flashed with metal.

All projecting masonry, such as belt courses, cornices, window heads, etc., should be equipped with a drip cut into the soffit and projecting as far from the wall as the design will permit. This is a commonly neglected detail that is the cause of much trouble. Correct principles of design are shown in Fig. 8 and a clear demonstration of the staining and dampness resulting from the neglect of this detail is shown in the illustration, Fig. 7.

Soldier courses and other special masonry patterns which make it difficult for the mason to fill the joints thoroughly should be minimized and extra care taken in their construction.

Hollow walls are not likely to cause leakage if the hollow space is flashed and drained to the outside. The circulation of air through these spaces and the ability of the masonry to dry out quickly because of them, are advantageous features, but if the hollow spaces are not properly drained they will accumulate water and may develop disastrous leakage.

All window and door frames should be designed to facilitate thorough caulking with a durable elastic caulking compound. A clearance of ¼ or ⅜ inch should be left all around such frames for the purpose and later covered with a suitable staff-bead after the caulking has been completed.

Plastering on the interior of masonry enclosing walls is seldom advisable, partly because leakage will damage plaster and interior decorations; partly because such walls are poor insulators and may cause excessive condensation on the interior; and to some extent because such walls have poor acoustical or sound absorbing properties. Furring interior masonry walls before applying plaster is always recommended.

BITUMINOUS DAMPPROOFINGS

IN the waterproofing trade the term "dampproofing" refers to the application of bituminous materials to the inside surfaces of exterior walls above grade. It has become common practice, especially in skeleton construction so to dampproof enclosing walls and to apply gypsum plaster directly to the dampproofed surfaces. The function of this treatment is to protect the plaster from contact with moisture absorbed through the wall by capillarity, and where plastering must be applied directly this practice is recommended. However, such dampproof coatings are incapable of resisting any hydrostatic pressure such as may develop through shrinkage cracks and unfilled joints.

Some authorities object strongly to this practice

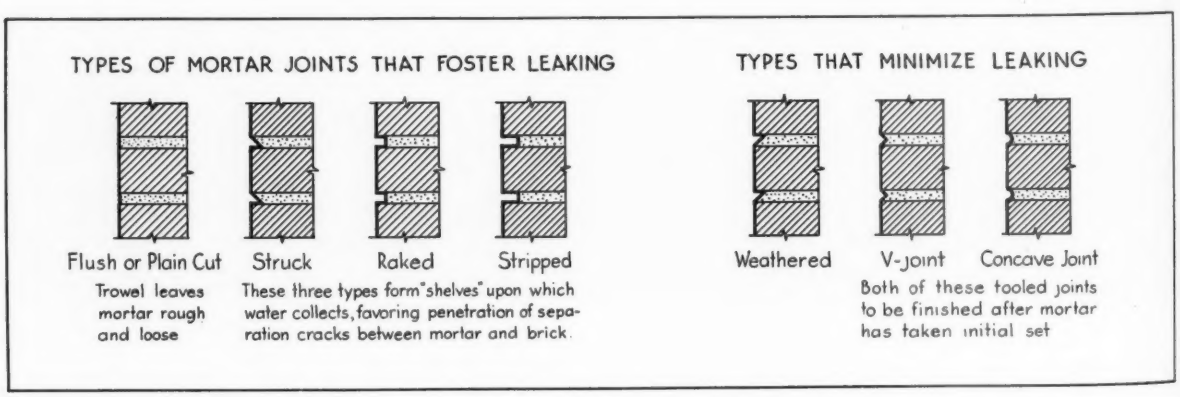
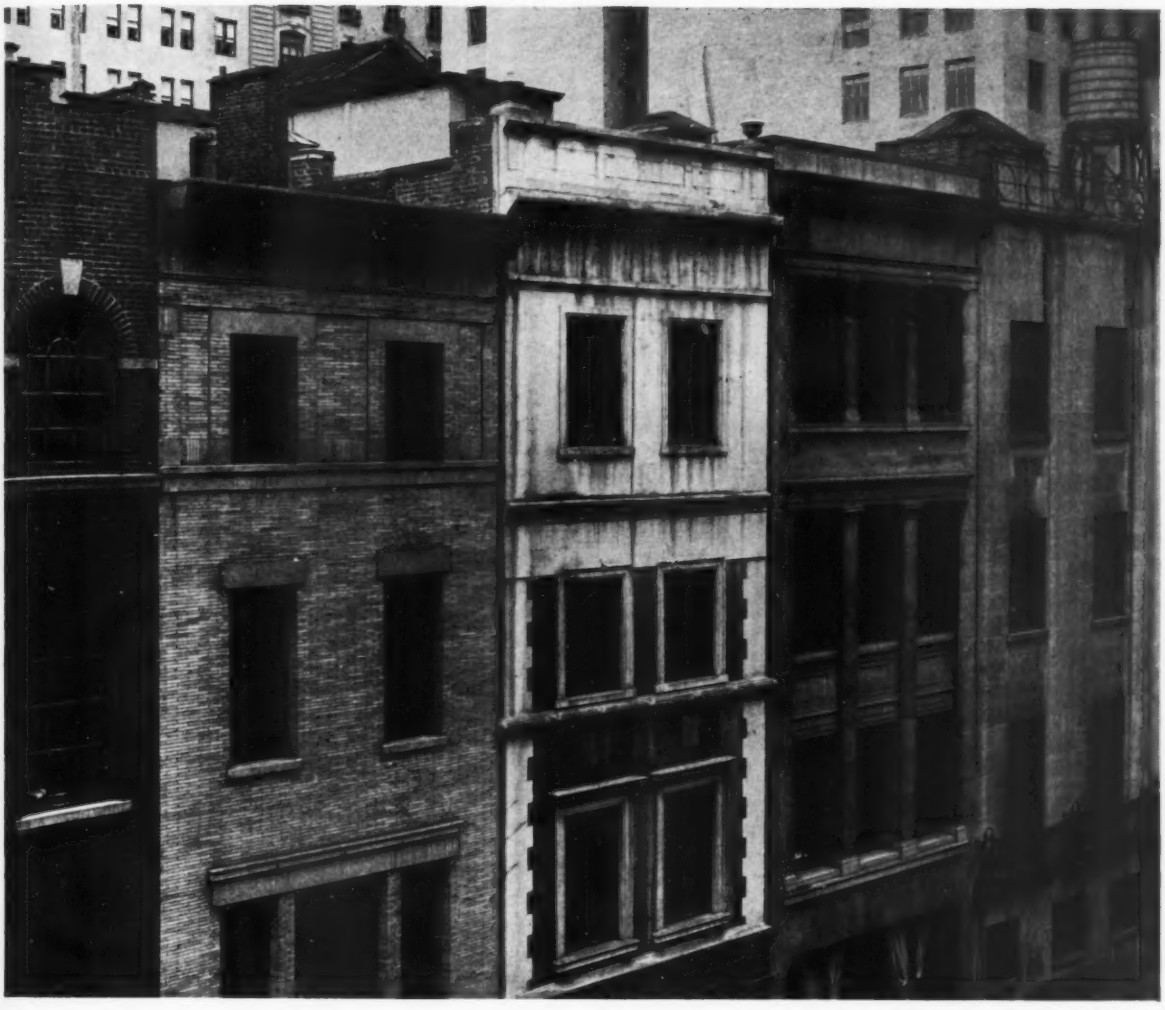

TYPES OF MORTAR JOINTS THAT FOSTER LEAKING
TYPES THAT MINIMIZE LEAKING
Flush or Plain Cut
Struck
Raked
Stripped
Weathered
V-joint
Concave Joint
Trowel leaves mortar rough and loose
These three types form "shelves" upon which water collects, favoring penetration of separation cracks between mortar and brick.
Both of these tooled joints to be finished after mortar has taken initial set

Figure 6 . . . The formation of masonry joints is a factor in weather-tight construction. Recommended thickness is ⅜ inch



VAN ANDA

Figure 7 . . . Five adjacent buildings reveal good and poor design and construction. From left to right, the first and second show no damage except where water flows down junction of property walls. The center building shows serious staining due to lack of drips on projecting cornice and belt courses, and serious efflorescence of brickwork in lower floors resulting from continued seepage. Projecting courses on fourth building are provided with drips. At extreme right, staining is due to faulty parapet flashing under metail railing

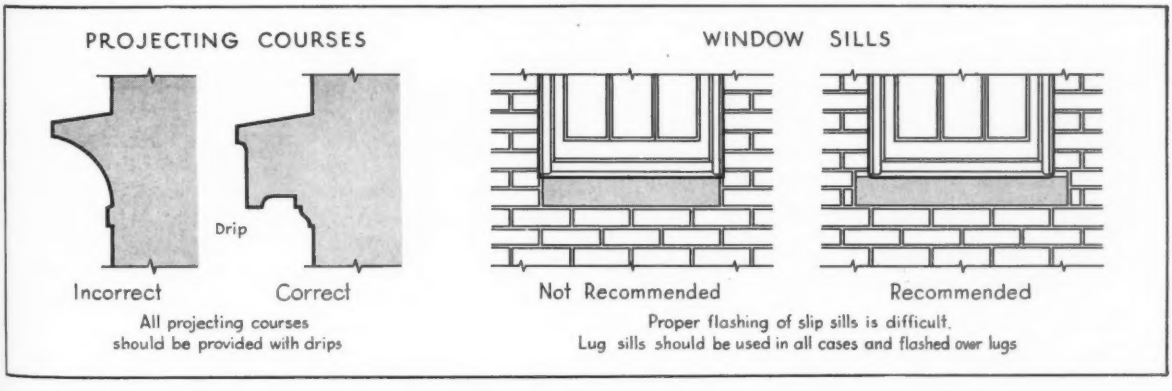


Figure 8 . . . Important design details are provision of drips on projecting courses, use of lug sills with proper flashings, and provision for adequate caulking of window and door frames

and of course insist upon furring of all plaster work. Their principal arguments are:

1. If the dampproof coating is effective the entire wall must dry out through the exterior face, and since this drying out is much slower than absorption deteriorating effects are accelerated.

2. If furring is used the slight dampness resulting from capillary transmission of water to the inner surface may be harmlessly absorbed by the air circulating around the furring strips, or may be drained down the wall and carried away by through flashings at the spandrel beams.

3. Reliance upon such dampproof coatings encourages carelessness in the design and construction of exterior masonry work in the erroneous belief that a durable and satisfactory barrier to water penetration is thus produced.

If such dampproofing is made mandatory by the need for plastering directly on interior surfaces, three types of asphalts are available: The first is a mastic containing heavy asbestos reinforcing and applied as a trowel coating. It is recommended for dampproofing solid brick walls, but should not be used for hollow back-up tile since the material fills the grooves of the tile and prevents proper keying of plaster to the masonry. The second is a semi-mastic brush coat containing fibre and is the heaviest consistency of coating recommended for hollow tile. The third is a brush coat without fibre reinforcement. It is largely used but lacks the body of asbestos reinforced materials. None of these may be relied upon to fill cracks or badly formed joints in hollow tile or other back-up masonry. Such openings should be pointed or repaired before applying any bituminous dampproofing.

These dampproofing materials do not improve the bond of plaster to the wall, statements of manufacturers to the contrary notwithstanding. The term "plaster bond" is misleading when applied to these materials. None of them may be applied to concrete surfaces as a base for any plaster, nor can cement plaster be applied successfully over them.

FLASHINGS

AN important aspect of good design is the proper use of flashings. They should be used to prevent entrance of water into masonry at vulnerable points, to divert water in masonry to the exterior, and to prevent capillary rise of water through masonry from the earth. Points requiring particular attention in the design of flashings follow:

Flashing materials usually employed are copper, lead-coated copper and bituminous membrane materials. Differences of opinion regarding choice between these materials are largely based upon questions of cost and workmanship rather than durability. It is generally recognized that copper flashings, properly installed, are preferred for all work of high quality. They should be used wherever budget conditions permit. Their chief drawback, the development of stains on light colored masonry where metal comes to the exposed surface, can be eliminated by the use of lead-coated copper, at least for parts subject to exposure. Bituminous flashings, composed of asphalt or tar-saturated felts or fabrics and usually embedded in, as well as covered by, a troweled or brushed coating of bituminous waterproofing compound, represent a lower cost and more easily installed flashing. But these, too, may cause staining of light colored masonry if the bitumens employed are not permanently insoluble in water. Some asphaltic compounds are emulsifiable and may seep through masonry.

On most work it is possible to use copper or lead-coated copper for all through wall flashings where straightaway runs are normally installed and fitting does not involve expensive cutting and soldering to assure tightness. In spandrel beam flashing where such fitting is expensive bituminous flashings are frequently favored.

Lead should not be used for through wall flashings. Studies reported by the British Building Research Station reveal that lead is attacked by portland cement mortar and by fresh lime mortar, though it is not affected by lime mortar that has thoroughly carbonated. Since this may not occur for a long period of time in the interior of a masonry wall, it is advisable to avoid the use of lead unless the lead is thoroughly coated on both sides with bituminous waterproofing compound. This difficulty, however, is not detrimental to the use of lead-coated copper for through flashings because mortar quickly carbonates near the surface of the wall where the lead coating is effective in preventing copper staining. If the coating is eroded in the interior of the wall, the copper remains as an enduring barrier.

Parapets are extremely vulnerable parts of any masonry structure. They should be provided with continuous through flashings under the coping unless the coping is of impervious material with water-tight joints such as are provided by the use of salt-glazed tile with lapped and sealed joints. The back face of low parapets may be completely covered with a durable, properly ventilated flashing to prevent water from entering at this point through the back-up masonry of the wall below. If parapets of this type are solidly covered, frost action may develop under the waterproof facing and break it away as well as damage the masonry itself. See Figure 9. Better practice is to provide a through flashing at the base of the parapet so placed as to project any water that may enter through the exterior face.

Projecting courses of all types should be flashed on the upper surface to prevent the entrance of water at the shelf formed by the projection. This rule

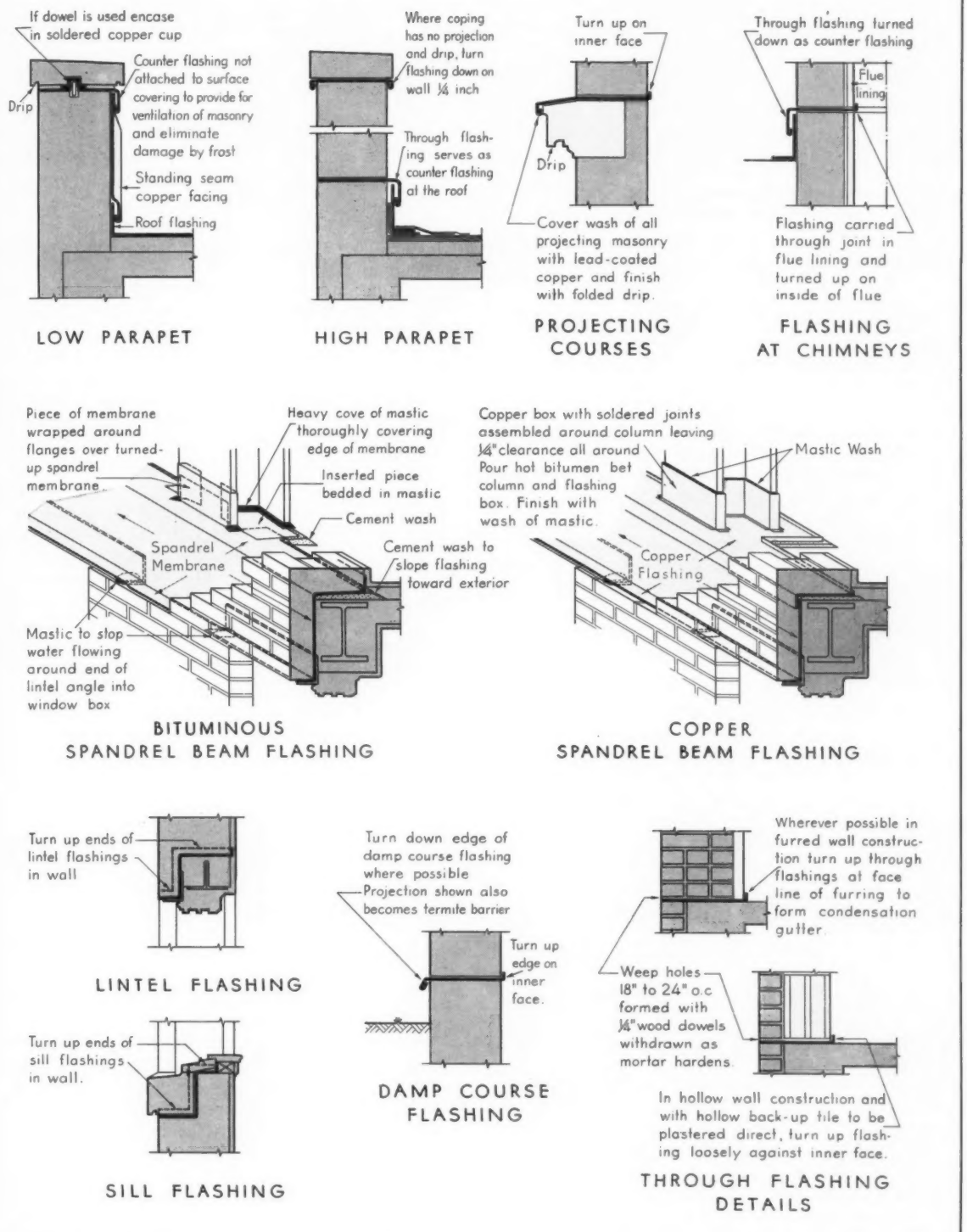

If dowel is used encase in soldered copper cup
Drip
Counter flashing not attached to surface covering to provide for ventilation of masonry and eliminate damage by frost
Standing seam copper facing
Roof flashing
LOW PARAPET
Where coping has no projection and drip, turn flashing down on wall ¼ inch
Through flashing serves as counter flashing at the roof
HIGH PARAPET
Turn up on inner face
Drip
Cover wash of all projecting masonry with lead-coated copper and finish with folded drip.
PROJECTING COURSES
Through flashing turned down as counter flashing
Flue lining
Flashing carried through joint in flue lining and turned up on inside of flue
FLASHING AT CHIMNEYS
Piece of membrane wrapped around flanges over turned-up spandrel membrane.
Heavy cove of mastic thoroughly covering edge of membrane
Inserted piece bedded in mastic
Cement wash
Spandrel Membrane
Cement wash to slope flashing toward exterior
Mastic to stop water flowing around end of lintel angle into window box
BITUMINOUS SPANDREL BEAM FLASHING
Copper box with soldered joints assembled around column leaving ¼" clearance all around Pour hot bitumen bet column and flashing box. Finish with wash of mastic.
Mastic Wash
Copper Flashing
COPPER SPANDREL BEAM FLASHING
Turn up ends of lintel flashings in wall
LINTEL FLASHING
Turn up ends of sill flashings in wall.
SILL FLASHING
Turn down edge of damp course flashing where possible
Projection shown also becomes termite barrier
Turn up edge on inner face.
DAMP COURSE FLASHING
Wherever possible in furred wall construction turn up through flashings at face line of furring to form condensation gutter.
Weep holes 18" to 24" o.c formed with ¼" wood dowels withdrawn as mortar hardens.
In hollow wall construction and with hollow back-up tile to be plastered direct, turn up flashing loosely against inner face.
THROUGH FLASHING DETAILS

Figure 9 . . . Flashings should be installed at all vulnerable points where the movement of water in masonry may be interrupted by construction members or openings. All flashings are through flashings designed to divert water to the exterior

applies to belt courses of brick or stone, as well as to cornices or projecting decorative elements. Note in the detail in Figure 9 how the flashings cover the wash of the projecting course and are folded down over the edge to form a primary drip. Lead-coated copper should be used for this purpose to avoid staining. Reglets designed to stop the flashing short of the exposed edge frequently cause trouble through frost action or cracking of the masonry.

Chimneys are a frequent source of leakage. Through flashings should be used at all points where chimneys join roof lines and the flashings should be carried through joints in the flue lining itself and turned up inside the flue. Most of the leakage in chimneys is due to water traveling between the flue lining and the masonry enclosure.

Spandrel beam flashings should extend completely through the masonry in two or more horizontal steps, extending from the floor line down to the lintel line of windows below. Particular care should be exercised in flashing the columns. In Figure 9 are shown recommended details for the use of both bituminous membrane and copper flashings. In the latter the column is enclosed in a copper box (with soldered joints) which loosely encases the steel work. After fitting and soldering to the spandrel beam flashing, the space between the column box and the steel is filled with hot bitumen. The top edge is then given a wash of waterproof mastic. This is the most durable, water-tight spandrel detail used by the highest grade contractors.

Window sills, especially those made up of multiple units of masonry, should have through flashings placed beneath them and extended into the masonry wall as shown in Figure 9. The ends of these flashings should be turned up in the mortar joints to force water to the outside edge rather than around the ends.

Lintels over door and window openings should have through flashings placed immediately above them and extended into the masonry with turned up ends.

Damp course flashings should be installed at the water table or just above the ground level to prevent water rising by capillary action into the masonry above grade. Through flashings, of course, must be used as shown in Figure 9. If the design will permit the flashing to be extended from the outer face as indicated, it tends to prevent the entrance of termites through the masonry wall and into interior wood framing.

All flashings shown extend from one face of the masonry to the other. Though architects may object to the projection of a flashing on the exterior surface, this design should be permitted wherever possible as it substantially improves the effectiveness of the flashing. Otherwise through flashings should be stopped not more than ½ inch from the exterior face.

Where plastering must be applied directly to the interior surface of masonry walls the through flashing should be turned up loosely and to a point higher than any ridge provided in the flashing for bonding purposes. Where the interior plaster work may be furred from the wall, the inner edge of the flashing should be turned up at the face line of the furring to form a gutter which will carry off any condensation or seepage on the inner face of the masonry. It is also considered advisable by experienced contractors to provide weep holes at 18 to 24-inch intervals above through flashings, particularly in hollow wall and hollow back-up tile construction. These may be formed by inserting ¼ inch wood dowels in the mortar and withdrawing them before the joint has taken its final set.

Remedial Waterproofing Methods . . .

WHEN existing substructures prove to be leaky and require remedial treatment, a very thorough study of existing conditions should be made prior to any decision as to the procedure to be followed. Experienced counsel should be employed wherever possible to assist in this work.

While no specific recommendation can be laid down as to methods appropriate to any individual case, the following notes will indicate what processes are generally considered reliable and the conditions they may be called upon to correct. There should be no mystery or hocus pocus about remedial waterproofing and dampproofing. Almost invariably methods and materials employed in new construction are re-employed in remedial work to correct deficiencies in the original structure.

Condensation is often the cause of dampness attributed to seepage through walls and floors of substructures. Where this dampness is periodic and does not appear to come from localized areas, a study should be made to determine if its appearance is coincident with the admission of warm humid air through the basement. This air, coming in contact with relatively cold masonry walls or with cold pipes may cause condensation sufficient to flood the surface of a relatively large floor area. Proper ventilation, and insulation of these cold surfaces from contact with moist air, are the only practicable solutions to the problem[18].

Subsoil drainage should be considered among the first of the remedial procedures. In small dwellings damp basements are frequently caused by dry wells in too close proximity to the foundation or of inadequate size. Grading close to the building should be studied to ascertain if surface water can be kept away from foundation walls. Footing drains should be examined for stoppage. Where none exist it may be more satisfactory in the long run to excavate to the footing level and install new drains to a suitable outfall than to apply waterproofing materials.

LEAKAGE THROUGH CRACKS

WHERE a crack in the masonry itself or in the joint between floors and walls is obviously the source of leakage, the following methods may be tried:

If the crack is in a basement wall the preferred method is to make repairs from the outside by excavating until the crack is exposed. The crack should then be cut back to form a channel an inch or two deep and filled with a 1:1½ cement-sand mortar mixed to the consistency of moist earth. This should be well rammed into the crack with a caulking or ball-peen hammer. The adjacent wall area should then be treated with an impermeable cement mortar skin following the practice outlined for this work in new construction. The wall must be thoroughly cleaned and chipped back, if necessary, with bush hammers or compressed air tools to assure perfect bond.

If the crack cannot be plugged from the outside the same treatment may be used on the inner surface. It is imperative that water pressure be relieved until the plaster coat has been properly cured. This may be done by driving well heads or sump-pits outside of the wall and pumping out ground water until the leakage has stopped, maintaining the pumping operation until the cement plaster has hardened properly; or pipes may be driven through the wall to serve as weep holes and the water drained through them until the rest of the work is completed. The holes are then plugged.

If leakage occurs through floor cracks or through porous areas in the floor a new floor should be laid over the old with a watertight joint at the walls. If leakage is serious a waterproof membrane may be applied to the old floor before laying a new concrete surface. In laying a new floor of this type it should be placed in rectangular slabs not exceeding 100 sq. ft., placing the alternate slabs first and then coating the edges with hot bitumen before placing the remaining slabs.

PATCHING HONEYCOMBED AREAS

WHERE leakage is apparently due to excessive porosity in certain areas (sometimes caused by hidden stone pockets or by poor joints between old and new work) the surface should be cut out to a depth of at least one inch, making the edges at right angles to the surface. The areas should be cleaned and wetted and a bonding coat of one part cement to one of sand applied approximately ¼ inch thick. Mix one-half to three hours before using and re-mix without adding water to keep the mortar from stiffening. It should be forcibly projected or dashed onto the surface. Then build up the area with mortar placed in coats about ⅜ inch thick in the manner indicated for water-tight cement mortar.[20]

LEAKAGE FROM MULTIPLE CAUSES

IF seepage is prevalent over large areas indicating a porous condition in the concrete, or if the seat of trouble cannot be localized, resort must be had to one of the following three methods.

Bituminous membranes may be applied to existing construction if (a) the water side of the leaky structure can be exposed sufficiently to permit the application of a continuous membrane over the whole area subjected to water pressure, or (b) if a membrane applied on the side away from the water can be backed up by additional masonry of sufficient weight or strength to resist the hydrostatic pressure that would otherwise burst the membrane away from the wall or floor. Procedures described for new construction are followed in either case. Hydrostatic pressures are usually computed without allowing for the resistance which existing masonry may impose. That is, the pressure is considered to be 62.5 lbs. per sq. ft. per foot of head.

When the existing structure has a waterproof membrane and leakage occurs, it is invariably due to a failure of the membrane through puncture or deterioration. Under these circumstances the seepage point on the interior may not correspond with the actual break in the membrane. Water may pass through the membrane and creep along its surface or may travel long distances within the masonry following minute cracks or porous areas where it meets the least resistance. Its appearance on the inner surface may be several feet from the source of trouble. To repair such membranes, it may therefore be necessary to expose very large areas. Usually it is cheaper to have recourse to other methods.

Waterproof cement coatings may be applied on the interior of such walls in the manner indicated for new construction and for patching over repaired cracks.

Iron method surface treatments may also be tried on existing concrete walls, though of course they have no application on walls of unit masonry, such as stone, hollow concrete units or brick. Procedures described for new work are followed.

Dampproofing compounds, such as bituminous brush or trowel coatings and colorless liquid waterproofing materials made for superstructure dampproofing, cannot resist hydrostatic pressure and should not be relied upon for substructure work of this character.

Remedial Dampproofing Above Grade . . .

SO many factors may contribute to wet wall conditions or interior leakage through the superstructures of masonry buildings that the thoroughness with which a preliminary survey of causes is made has a great influence on the effectiveness of the remedial measures subsequently undertaken. Roof leaks, interior piping, and condensation on exposed walls are frequent sources of trouble attributed to leakage through walls.

The survey should first consider whether details of design are at fault, such as lack of drips in projecting courses or faulty detailing of parapets, chimneys and flashings. One or more existing flashings in troubled areas should be cut away and examined for deterioration or faulty installation. While flashings are theoretically the second line of defense in masonry construction, it is advisable to replace all defective flashings and to install new flashings at vulnerable spots not properly protected in the original construction. Most wet wall conditions and superstructure seepage, however, require treatment of mortar joints.

Two major schools of thought in this field differ solely on the value of colorless dampproofing liquids. The first, rejecting them entirely, relies upon proper repointing of mortar joints. The second requires repointing followed by overall treatment to fill all pores in both masonry and mortar to whatever depth the liquid will penetrate.

REPOINTING METHOD

IF we agree with the majority of authorities that wet walls and leakage through masonry walls above grade are primarily due to separation cracks between the mortar and the masonry, then we must accept the fact that the best way to correct wet wall conditions in existing masonry is to stop up these cracks. By the same token, if walls should be permitted to "breathe" and dry out through the face any water that enters by capillary action, absorption or through other causes, it is not necessary or desirable to close the surface pores present in practically all brick and stone.

Many successful dampproofing contractors are in agreement with research authorities who believe it unsound practice to seal the pores of exterior masonry with liquid treatments. They recommend that faulty joints be cut away as deeply as practicable from the exterior face—from ½ to as much as 1½ inches, depending on the hardness of the mortar and the condition of the joints—and repointing with a cement mortar. If this work is properly done, proponents of this method believe there is no need to apply colorless waterproofing compounds over the entire surface of the wall. After a thorough repointing job has been completed the wall should be left for a sufficient period of time to ascertain the effectiveness of this treatment. If leakage has not been entirely stopped the repointed work itself should be examined and, if faulty, the cracked joints repaired. One contractor, following this practice on several millions of square feet of masonry walls of all types, has been eminently successful and has never resorted to the application of colorless dampproofing liquids.

REPOINTING MORTARS

THE practice most frequently recommended for repointing is to make a mortar containing one part cementitious material to not less than 2½ nor more than 3 parts of sand. This mortar may be of the same composition as the mortar used in the wall, if the separation cracking appears due to improper workmanship or it may be a similar composition modified to overcome the deficiencies of the first. It is not good practice to change the type materially, as the difference in characteristics between the original bed mortar and the repointing material may cause warping strains.

If the mortar contains any portland cement it should be prepared at least two hours before using so that first shrinkage takes place before it is applied. This, of course, requires reworking before application. The reworked mortar, moderately dry, should then be put into the joints in such a way as to fill them thoroughly but not to make an extremely dense, impervious joint. After the repointed joint has begun to harden, it should be tooled to a V or half round shape as recommended for new construction. The whole purpose of repointing is to secure adhesion of the mortar to the masonry and to form a joint that will not develop separation cracks through shrinkage.

There are a large number of proprietary caulking and pointing compounds available on the market, most of which have bituminous materials in their composition or are otherwise made waterproof or impervious. Insufficient authority has been found to establish the value of these materials over a sand mortar that permits the wall to breathe.

LIQUID SURFACE TREATMENTS

THE second school of thought believes that application of certain types of liquid dampproofing compounds over exterior masonry contributes definitely to successful results. Certainly many waterproofing contractors use them as one step in their procedure.

No reputable manufacturer claims any colorless material so far discovered will bridge over separation cracks of visible width or fill faulty joints. Hence

the first step invariably is to repoint mortar joints, repair or install flashings, etc.

There is a host of proprietary liquid "waterproofers" offered for the final surface treatment. Most of them are colorless, some have slight color limiting their use to dark toned masonry, others have definite color, as in the case of paints and bituminous surface treatments. Many of the so-called colorless materials eventually cause discoloration.

Bureau of Standards Research Paper 771, published in March 1935, is the latest reliable study of the value of representative colorless waterproofings for exterior masonry. Abstracts from an official summary state, "It was found that some types of treatment were of little value from the start, and others which initially gave good waterproofing values, deteriorated rapidly. However, some types have quite consistently shown high waterproofing values over exposure periods of 8 to 12 years."

In general wax types proved durable but caused discoloration; insoluble soap types produced no appreciable discoloration but were not very durable; thinned fatty acids and particularly those with high-melting paraffin in solution were fairly satisfactory if adapted to the pore structure of the masonry under consideration; varnishes, lacquers and waxes which produce a film, treatments using reacting solutions to produce an insoluble precipitate, and treatments intended to react with the masonry were not found to be very effective. Some of the more durable types were found to have preservative value on masonry, supporting their use for prolonging the life of statues, monuments, etc. The report does not identify trade names.

Care must be exercised, obviously, in selecting products of suitable character and proven performance. Since reliable as well as shyster manufacturers make substantially the same claims for their products the task is not easy nor is there any better guide than long use in the field and high reputation of the producer. In so far as claims for these products lead to omission of repointing and the expectation that mere application of one or several coats will produce satisfactory results, their influence is harmful. Their strongest supporters assert they should never be used as a short cut or low cost expedient for remedying leaky walls.

OPAQUE SURFACE TREATMENTS

WHEN the color or texture of the original masonry surface can be modified, as frequently occurs in reinforced concrete structures such as factories, warehouses, etc., it is possible to dampproof the exterior and protect the masonry against the deteriorating effects of weathering with surface coatings of paints or bituminous compounds. A procedure that has been successfully used to protect reinforced concrete structures from further spalling due to frost action and the rusting of reinforcement near the surface, consists of the following steps: First the surface is patched where spalling has occurred and all cracks filled. Then a cut-back bituminous priming coat is brushed or sprayed over the whole surface. Over this one or more coats of special prepared bitumens, hot or cold, are applied according to manufacturers instructions and the final coating is a tar aluminum paint which appears black on application but dries out to an aluminum colored finish. Treatments of this kind are best entrusted to experienced contractors.

The statements presented in this article are based upon careful study of the investigations, research papers and reports quoted below, and upon personal discussion of these problems with several experienced waterproofing and dampproofing contractors, manufacturers of cement, lime, brick and proprietary compounds, and correspondence with secretaries of trade associations and several of the authorities quoted.

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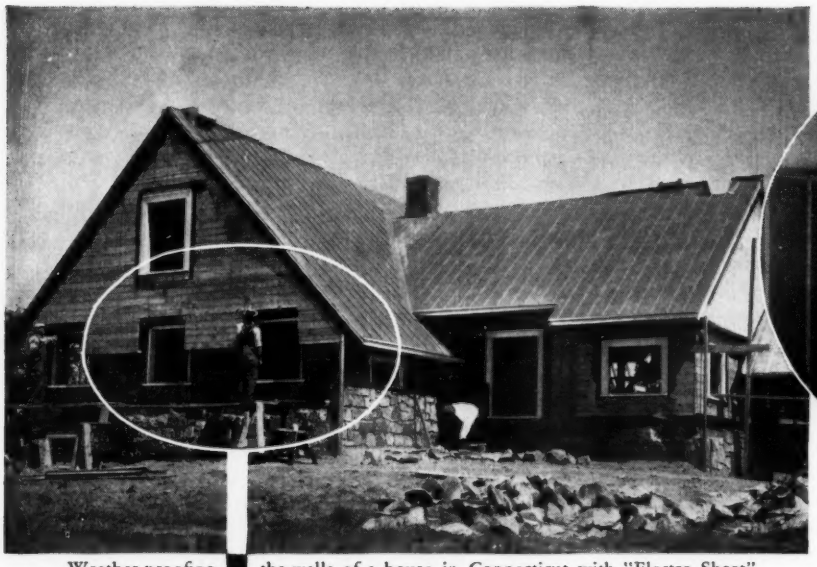
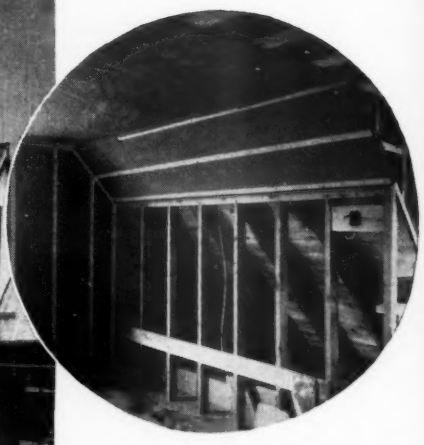
(21) "Effect of Calcium Chloride on Portland Cement and Concretes," Paul Rapp. 14th Annual Proceedings, Highway Research Board (Review only).

XUM



Weather-proofing the walls of a house in Connecticut with "Electro-Sheet".



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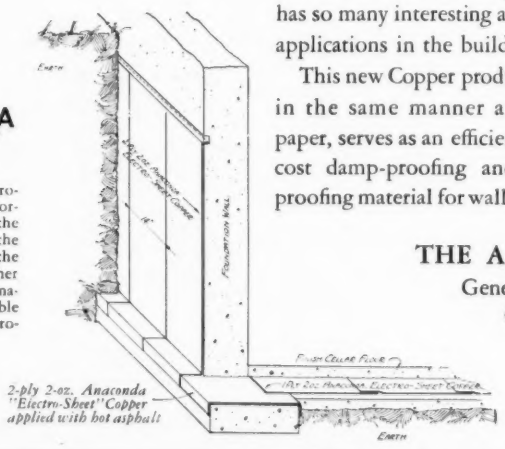

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GOOD concrete is inherently watertight. Poor concrete is not. Surface treatments or waterproofing compounds are of little value, unless concrete is made of good materials and properly mixed, placed and cured. Possessing these qualities, concrete of itself has all necessary watertight characteristics.

Watertight concrete is obtained by mixing proper proportions of cement and water with good sand and stone; by placing the concrete without segregation—and by curing it thoroughly.

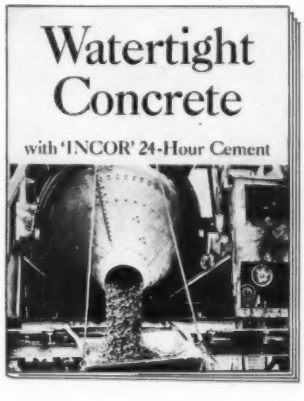
Usually when concrete leaks, water was used improperly—too much in the mix, too little in keeping the concrete wet until thoroughly cured. Too much mixing water weakens concrete and leaves innumerable void spaces which may cause leakage. Care must be taken to use the proper water content for a given exposure.

Thorough Curing Essential

Thorough curing is equally important. In fact, a well-made, carefully-placed concrete will be watertight or not, depending upon how well it is cured.

The importance of curing is apparent when it is recalled that newly-placed concrete hardens and attains strength through a chemical reaction between cement and water. This reaction continues only as long as water is kept in the concrete. If allowed to dry out before curing is well advanced, strength, durability and watertightness are impaired.

For watertight concrete, 10 days' curing is necessary when ordinary Portland cement is used. But practical limitations on most jobs make it impossible to wait that long. So, curing usually stops too soon and the quality of the concrete suffers.



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Through a basic improvement in the process of manufacturing Portland cement, "Incor" 24-Hour Cement combines with water in one-fifth the usual time. As a result, "Incor" concrete kept wet for only 24 hours has greater durability and watertightness than ordinary concrete as cured on the average job. However, for watertight structures we recommend that "Incor" concrete be kept wet for 48 hours—at which time it is as thoroughly cured as ordinary concrete kept wet for 10 days.

Any concrete can be cured 48 hours—but 10 days is decidedly another story! By producing thoroughly-cured concrete in the limited time available on most jobs, "Incor" goes a long way toward helping to assure stronger, denser, more watertight concrete.

Other Advantages

"Incor" makes concrete a ready-to-use material. Other advantages include savings of 40 to 60 percent on form costs in concrete buildings and bridges—earlier form re-use means that one form-set does the work of two or three. Heavy-duty floors can be re-surfaced over a week-end—preventing business disruption. In a word, concrete placed today is in use tomorrow.

The price of "Incor"* is now little more than ordinary cement—a fraction of resulting economies. Made and sold by producers of Lone Star Cement, subsidiaries of International Cement Corporation, New York; also sold by other leading cement manufacturers.

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Write for free copy of this timely, practical book. With simple text and illustrations, it tells how to determine the proper quantity of mixing water for various exposures; and how to mix, place and cure concrete. Address "Incor" 24-Hour Cement, Room 2200, 342 Madison Ave., New York.

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• The architectural firm of Craft, Gill & Walsh, 247 Park Ave., New York, was dissolved as of February 18th. Alton L. Craft will return to private architectural practice with offices at 6 East 45th St., New York. He requests that manufacturers send both catalogs and samples pertaining to residential work. Harrison Gill will continue to practice architecture at 247 Park Ave. Harold V. Walsh will not engage in active practice.

• Edward B. Wilkens, New York, and Seymour Saltus, Morristown, N. J., have been appointed by Columbia University as exchange scholars at the Royal Institute of Architecture in Rome, Italy, for 1935-36. The students, each in their last year at the Columbia University School of Architecture, were chosen because of outstanding academic work.

• Membership of the Florida State Board of Architects has recently changed. Franklin O. Adams, Jr., of Tampa replaces Rudolph Weaver of Gainesville as President. Harry M. Griffin of Daytona Beach takes Mr. Adams' place as a new member and Chandler C. Yonge of Pensacola replaces George L. Pfeiffer of Miami.

• Sturgis Associates, Inc., and William Stanley Parker announce that Mr. Parker has retired from the Corporation as of January 14th, 1935. Sturgis Associates and Mr. Parker will continue, independently, the practice of architecture at their previous offices, 120 Boylston Street, Boston, Mass.

• At a recent election of the Michigan Society of Architects, Clair W. Ditchy was elected President; Emil Lorch, 1st vice president; Frank H. Wright, secretary; Andrew R. Morison, treasurer; and Talmage C. Hughes, executive secretary.

• Walter H. Taylor, F.A.I.A., of Philadelphia, will address the Conference on Church Architecture on "Trends in American Church Design." The conference will be held at the Cathedral of St. John the Divine, New York, on May 7th.

• The Department of Architecture, College of Arts and Sciences, Pacific Coast University, at 2256 Venice Blvd., Los Angeles, California, desires complete manufacturers' catalogs and samples for library use.

• The Copper and Brass Research Association announces the removal of its office from 25 Broadway to 420 Lexington Avenue, New York.

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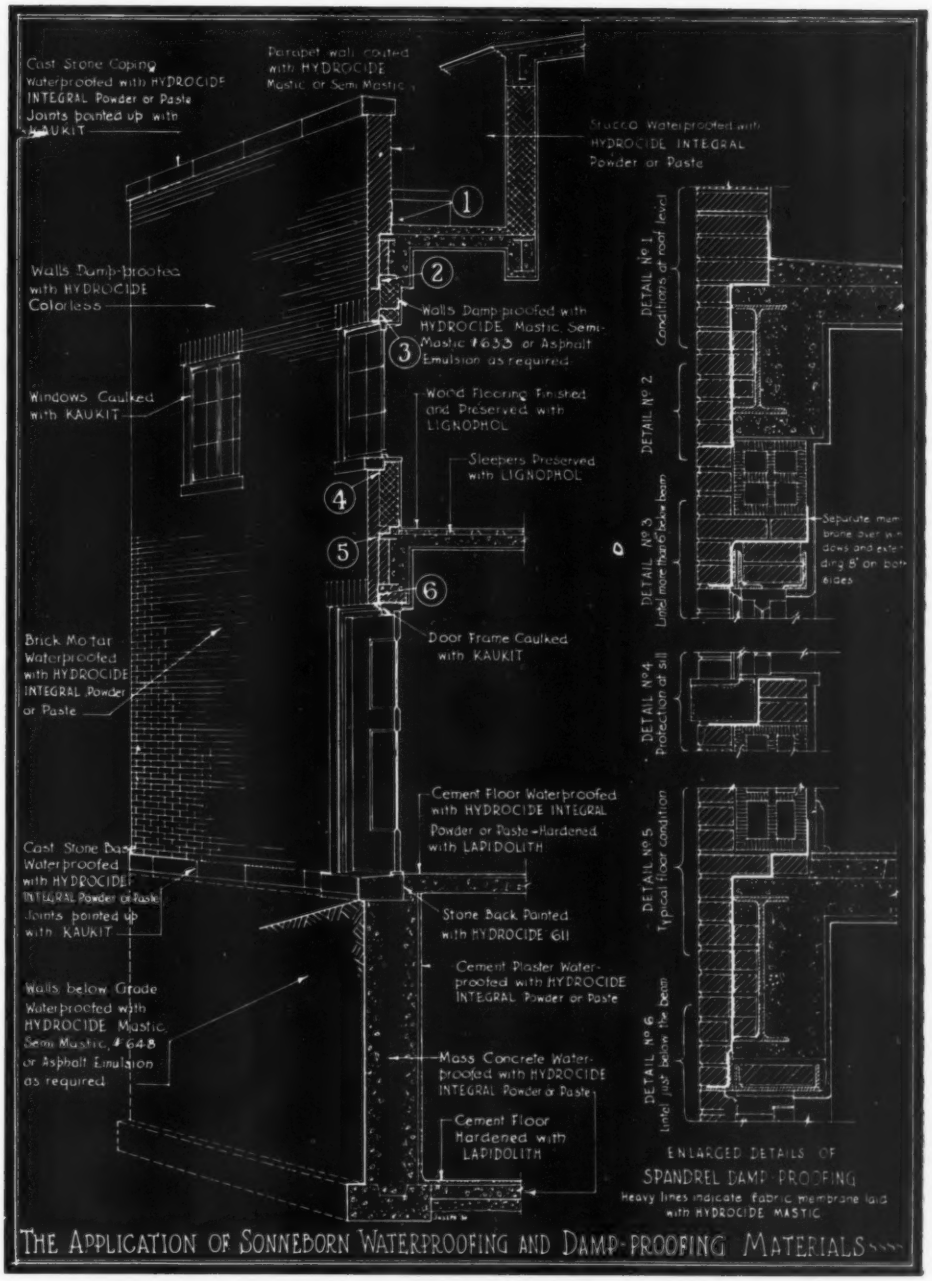
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Cement Plaster Waterproofed with HYDROCIDE INTEGRAL Powder or Paste
Walls below Grade Waterproofed with HYDROCIDE Mastic, Semi-Mastic #648 or Asphalt Emulsion as required
Mass Concrete Waterproofed with HYDROCIDE INTEGRAL Powder or Paste
Cement Floor Hardened with LAPIDOLITH
DETAIL Nº 1 Conditions at roof level
DETAIL Nº 2
DETAIL Nº 3 Lintel more than 6" below beam
Separate membrane over windows and extending 8" on both sides
DETAIL Nº 4 Protection of sill
DETAIL Nº 5 Typical floor condition
DETAIL Nº 6 Lintel just below the beam
ENLARGED DETAILS OF SPANDREL DAMP-PROOFING
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MINWAX Transparent Waterproofings, which were created in 1906, together with our Caulking Compounds, Flashing Materials and proper masonry pointing constitute the most thoroughly proven method of remedying leaking walls. We will gladly submit complete specifications and recommend qualified appliers.

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See Sweets, Section 4, Catalog 16

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*MINWAX originated the cotton fabric system of membrane waterproofing in 1904

• Clarence H. Tabor, Jr., was recently given the Anton L. Vegliante Memorial Award for distinguished service to the Architects League of Northern New Jersey.

• The Office of Carlos B. Schoeppl has now become the Office of Carlos B. Schoeppl and Arnold Southwell with offices at 528 Lincoln Road, Miami Beach, Florida.

• Harold F. Andrews, structural engineer and architect, announces the removal of his offices from 128 State St., to 82 State St., Albany, New York.

• The office of Dragon & Schmidts, architects, has been removed from 3016 Telegraph Avenue to Room 205, 2068 Allston Way, Berkeley, California.

• The Good Housekeeping Remodeling Contest which has been open to architects and owners during the past two building seasons will close June 30th, 1935. Two Gold Medal Awards will be given: one to the best remodeled house and one to the best remodeled room or interior begun and completed between June 1st, 1933, and June 30th, 1935. Further information can be had from Miss Helen Koues, Director Good Housekeeping Studio of Architecture and Furnishings, 57th St. at 8th Ave., New York.

DEATHS

• John du Fais, one-time associate of Cass Gilbert, John LaFarge and Augustus Saint-Gaudens, died at Miami Beach, Florida, March 14th. Mr. du Fais, who was 79 years old, was born in New York, and studied at Harvard University and the Massachusetts Institute of Technology. Shortly after his school work he helped decorate Trinity Church in Boston, later coming to New York to open his own architectural office. He had worked on the State Capitol at Albany, the Cornelius Vanderbilt residence and the Produce Exchange and with Cass Gilbert was architect for the Union Club in New York. Mr. du Fais had been a member of the American Institute of Architects since 1901 and was president emeritus and a founder of the Architectural League of New York.

• Beverly S. King, New York architect, died March 4th from an injury received in an automobile accident in Washington, D. C. Mr. King, who was 56 years old, had been a deputy administrator of the NRA since August, 1933 and supervised the basic and supplemental codes of sixty-five industries representing an investment of three billion dollars and a group of employees totalling 450,000. Mr. King was a philatelist of note, having written several books on the subject of stamp collecting. He was the owner of one of the finest collections of twentieth-century stamps in the country and was widely regarded as an authority in this field.

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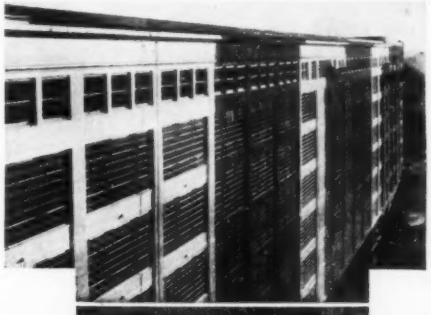
Many materials now used in waterproofing and dampproofing actually disintegrate in the presence of water. This has caused very expensive failures in building foundations, tunnels, bridges, swimming pools and other concrete or masonry structures.

Genuine coal tar pitch as used in Koppers Waterproofing materials is practically insoluble in water and contains nothing which would induce absorption of water or emulsification with water. The safest rule to follow in waterproofing or dampproofing work is to use only coal tar pitch in any place where water is encountered.

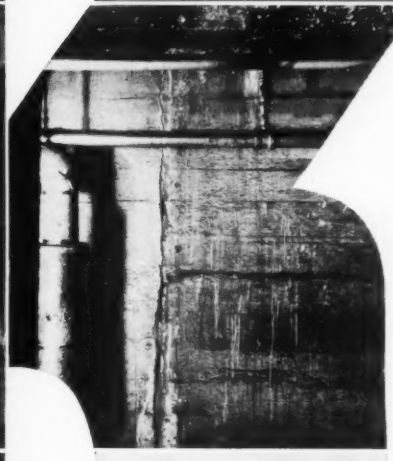
Send for the Sweet's reprint which gives complete details on various types of waterproofing and dampproofing, and the Don Graf Data Sheets (notebook size) which give latest application details.



A huge factory building on the Atlantic Seaboard being painted with Koppers HP Primer and Lumino to stop surface disintegration of the concrete.*

Koppers Waterproofing on sidewalk at the Pittsburgh Post Office just before final concrete course.

Concrete spalling on a two-level bridge in an eastern city. The waterproofing disintegrated.*



The foundation of this newspaper plant cracked and leaked when the wrong kind of waterproofing distintegrated.*

Koppers Waterproofing in new Mellon Institute, Pittsburgh, Pa. Ready for final concrete course.

(*) Names on request.

Koppers Waterproofing on the Compton Hill Reservoir, St. Louis, has already lasted 17 years.

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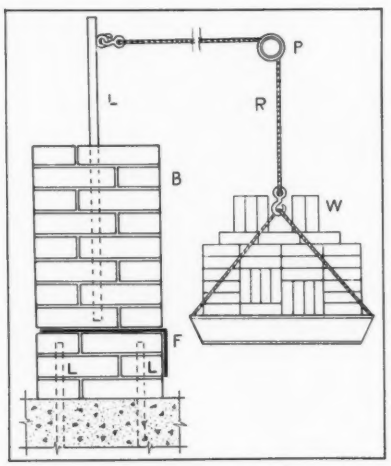
A PLAIN STATEMENT OF FACTS—

CHENEY Pioneered and Introduced Mechanically Keyed Thru-wall Copper Flashing to the Architects and Builders of America. Millions of feet have been installed in all sections of the country without a single failure to our knowledge. The positive efficiency of Cheney Flashing is recognized without question.



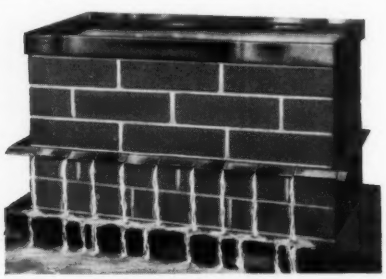
MASONRY BOND TEST

Resistance to Rupture is the real test for any wall flashing. Tests made by Prof. Frederick O. Anderegg prove conclusively that Cheney Flashing does make a positive mechanical bond.

EXPLANATION OF TEST

B—12" x 36" x 42" brick panel. F—Cheney Flashing. L—Steel angle irons. P—Pulley. R—Rope. W—Weights.

Two tests were conducted, one with Cheney Flashing, one with plain copper. Weights were added until wall fractured. Test with Cheney Flashing showed wall had a Modulus of Rupture of 27 pounds per square inch compared to 9 pounds per square inch for copper having no vertical bond. Before wall could be pulled over, mortar in Cheney keys had to be sheared off, proving an effective mechanical anchorage.



DRAINAGE TEST

Photo shows brick test panel of standard construction with Cheney Flashing installed and bottomless pan on top.

Water equivalent to cloud burst precipitation, about 24 inches per hour, was poured into pan. In 37 seconds the water flowed out of wall over flashing, from each lower key, the length of panel, proving that Cheney Flashing automatically provides its own weep-holes.

PRICES REDUCED

The initial cost of pioneering this product having been absorbed, it now becomes a pleasant duty to announce a drastic reduction in the price of Cheney Flashing to a point where it can be used to a much greater extent, not only in buildings of first class construction but in buildings of ordinary construction where first cost previously has prevented its use.

FLASHING MUST BOND IN EVERY DIRECTION

Recently a number of competitive thru-wall flashings have been placed on the market which bond in lateral directions only. Practically all of these flashings are formed with bumps, diamonds, circles, snakes, etc., which shapes usually are drawn or stretched from the sheet copper thereby thinning and hardening the metal. Such flashings are not much more effective than ordinary crimped copper yet they command a premium above the price of crimped copper.

BASIC REQUIREMENTS FOR EFFICIENT FLASHING

Fundamentally—any thru-wall flashing should provide perfect drainage so that moisture can quickly drain from the wall; it should form a positive mechanical key-bond in every direction within the mortar bed; it should provide for expansion and contraction; it should have a water-tight interlocking lap that requires no soldering; it should have a stiff counter-flashing face that hugs the wall tightly after the base flashing has been installed.

CHENEY FLASHING IS THE ONLY PROVED THRU-WALL FLASHING THAT EMBODIES EACH ONE OF THE ABOVE NECESSARY FEATURES

NATION-WIDE DISTRIBUTION

Cheney Flashing has nation-wide distribution and complete stocks are available through the factories, warehouses and distributors of REVERE COPPER and BRASS Incorporated.

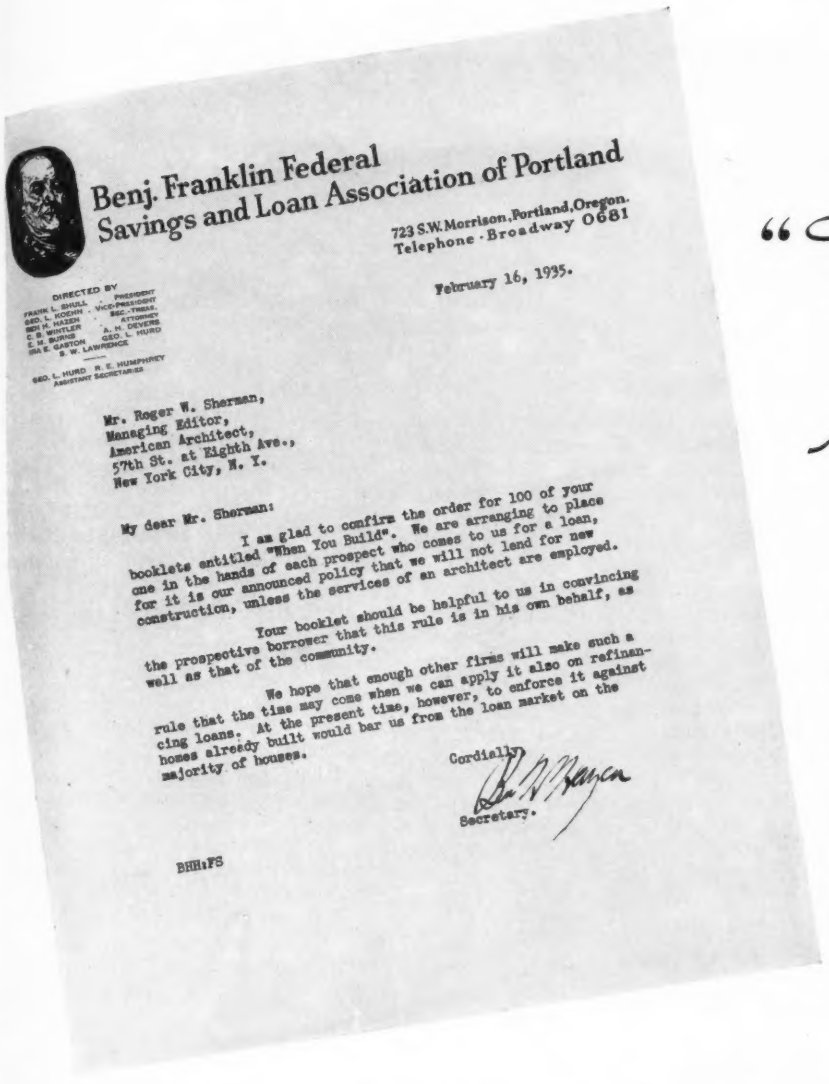
●

CHENEY FLASHING IS MANUFACTURED ONLY BY

THE CHENEY COMPANY

WINCHESTER, MASSACHUSETTS

NEW YORK PHILADELPHIA PITTSBURGH CHICAGO



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ASSISTANT SECRETARIES

February 16, 1935.

Mr. Roger W. Sherman,
Managing Editor,
American Architect,
57th St. at Eighth Ave.,
New York City, N. Y.

My dear Mr. Sherman:

I am glad to confirm the order for 100 of your booklets entitled "When You Build". We are arranging to place one in the hands of each prospect who comes to us for a loan, for it is our announced policy that we will not lend for new construction, unless the services of an architect are employed.

Your booklet should be helpful to us in convincing the prospective borrower that this rule is in his own behalf, as well as that of the community.

We hope that enough other firms will make such a rule that the time may come when we can apply it also on refinancing loans. At the present time, however, to enforce it against homes already built would bar us from the loan market on the majority of houses.

Cordially,

Secretary.

BHH:FS

"We Will Not Lend

for new construction unless the services of an architect are employed"

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Over 20,000 Copies of "WHEN YOU BUILD" (prepared by American Architect and sponsored by the Stuyvesant Building Group) have already been distributed and are doing their part to bring business to architects. If you haven't already done so, order your FREE copy today, or additional copies at actual cost of printing and mailing.

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The Readers Have a Word to Say

• STRAIGHT THINKING

Editor, AMERICAN ARCHITECT:

I WAS greatly impressed by your editorial in the March issue, "Time for Straight Thinking," particularly with your definition of the practice of architecture. I think that this definition is the best expression of architectural practice that I have ever seen or heard, even better than the one which the late Andrew D. White gave us (facetiously, of course) at a Gargoyle banquet when I was an undergraduate. It is substantially as follows: "Architecture is the art of covering one material with another to imitate a third which, if genuine, would be undesirable."—*Carl C. Tallman, Architect, Ithaca, N. Y.*

MAY I express my appreciation of your "Time for Straight Thinking" which appears in the March AMERICAN ARCHITECT. I believe you have very succinctly expressed the vital necessity at this time.

We have had on the one hand those people who have resisted the new solutions in the interests of traditional forms, just as a man refuses to wear a hat of novel block. On the other hand, we have had those people who in order to justify both the forms and their use of them are forced into the most extravagant and erroneous thinking.

I am not so much upset about the oldsters as I am about the younger radicals. They are the ones who are setting the drift of the age and unfortunately they have done an enormous amount of grossly inaccurate thinking, as for instance their contention that present architectural practice differs essentially from that of the past.—*Robert L. Anderson, Associate Professor of Architecture, Clemson Agricultural College, Clemson, S. C.*

• SO WHAT?

Editor, AMERICAN ARCHITECT:

ENCLOSED is a statement for my subscription and a check for same. I could not do without my copy of AMERICAN ARCHITECT.

As a retail lumberman I wish to express my appreciation and approval of the letter written by Mr. Morris S. Cox, and printed in your February issue. He presented the problem in such forceful manner that I cannot refrain from adding to it as it affects our locality.

We of the rural communities in this section live and build on a different standard from that familiar to the successful architect. A $4,000 home is one that all dream of and few have. The average small home contains about 6,500 cu. ft., costs perhaps $2,000, and is designed by a retail lumberman or a carpenter. Of course, it lacks charm. There is no beauty of lines or proportion. In most cases the space is poorly utilized, and structural weaknesses are common. These qualities are not expensive ones, yet why are they lacking?

Stock plans could possibly be the answer to our problem, but not the present available supply. I have a stack of them from a number of sources, none worth the postage. So what?—*Joe Robertson, Marshfield, Missouri*

• A READER PROTESTS

Editor, AMERICAN ARCHITECT:

THE letter of P. W. Thomas, Engineer, Rumford Falls Realty Co., published in AMERICAN ARCHITECT, page 96, February issue, makes it very definite as to what he wants and I disagree with your comment that it is important that the profession find a "sound solution" to these "problems"—thousands of designs to be submitted and plans made available at a nominal cost and "what would the cost be" and that lists, folios, cuts be furnished. It is just another real estate outfit wanting "data" from an "agency." Mr. Engineer knows what he wants and we are not suckers enough to furnish it. What is the matter with the local architect out his way? Perhaps he will not give service at a "nominal" fee.—*Harry Lucht, Architect, Cliffside Park, N. J.*

As to the profession supplying numerous stock plans or sketches for the selection by, and use of, building material dealers and real estate operators there can be no argument with Mr. Lucht's statement. The fact that companies of this kind want and need small house plans does show a demand for architectural service in this field. The problem remains: How can this demand be turned into business for architects? How can those who demand this service be made to see the advantage of professional service as a better solution of their problem?—Editor

• REFERENCE ON FLASHINGS

Editor, AMERICAN ARCHITECT:

APROPOS your excellent article "Roofing Materials" appearing in February AMERICAN ARCHITECT, may I make the following comments:

You say under flashings: "Copper is the preferred metal for all roofs, etc." The Boston Society of Architecture in their investigation through its Committee on Materials and Methods states in an article appearing in *Architecture*, December, 1932, issue as follows:

"With *wood* shingles, the use of *copper* for flashings or gutters is not advisable, the acid in the wood attacking the copper. *Lead coated* copper or *zinc* is recommended."

I have had personal experience with copper in contact with cedar shingles and have seen the copper removed after a few years almost completely rotted and pitted—and it was replaced with tin, painted!

With all the research data furnished by the copper industry I have never seen a reference to this deteriorating effect when used in contact with wood shingles.

Furthermore, the above quoted article states that *zinc* is recommended, whereas your statement under flashings is that zinc may be used in place of copper for all roofings with the exception of wood shingles. This, I think, should be reconciled.

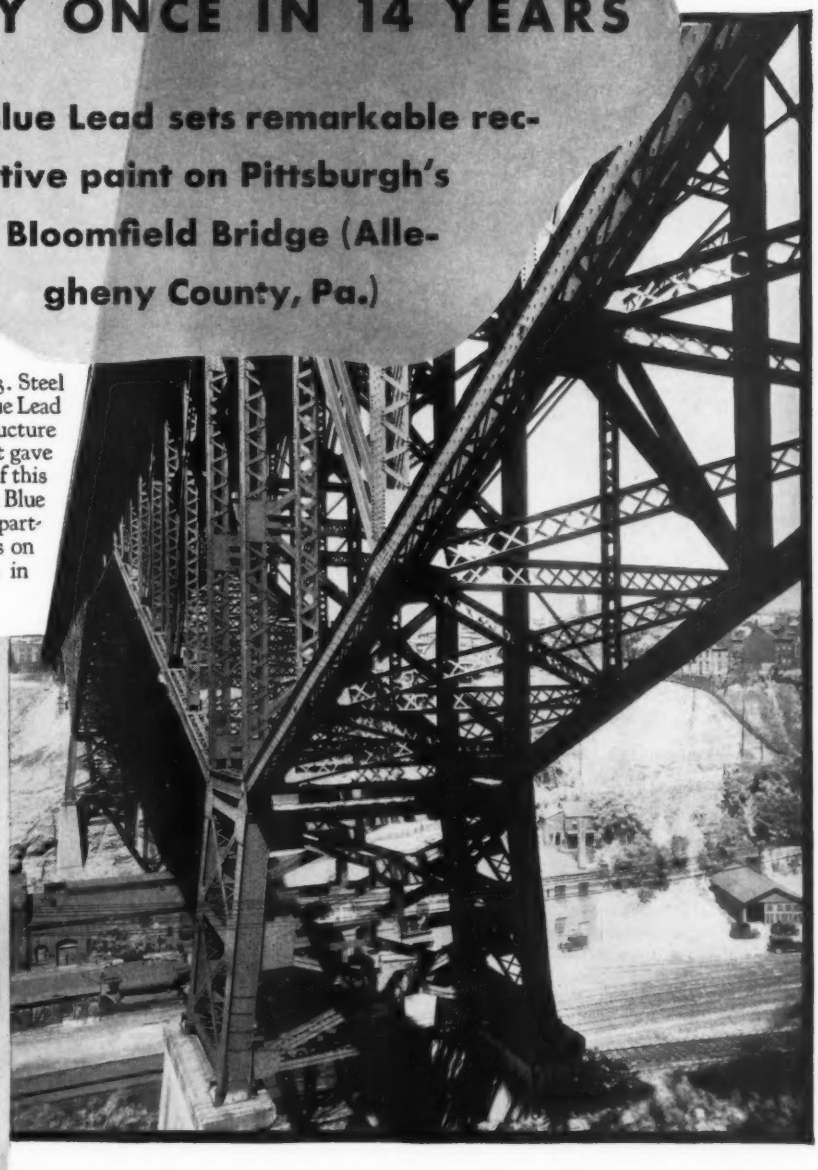
Under lead you say: "Lead may be used with any roof, etc." I have in front of me a copy of a letter written by the Bureau of Standards, Washington, D. C.—" . . . the Bureau would strongly emphasize the need of *protective* measures in the case of lead. Lead is often actively *corroded* by moisture penetrating the lime or cement if there is free lime present . . . the Bureau would suggest that the Lead Industries Association, Felix M. Wormser, Graybar Bldg., New York, be consulted." This is in reference to lead flashings in contact with masonry.—*Pierre Laird, Narberth, Pa.*

In reply to Mr. Laird and for information of others, further research discloses that: Zinc is not recommended for flashings in wood shingled roofs by the zinc industry; that corrosion of copper flashings, particularly in open valleys, may develop at the

(*Continued on page* 108)

REPAINTED ONLY ONCE IN 14 YEARS

Eagle Sublimed Blue Lead sets remarkable record as rust-inhibitive paint on Pittsburgh's Bloomfield Bridge (Allegheny County, Pa.)



● The Bloomfield Bridge, built in 1913. Steel given priming coat of Eagle Sublimed Blue Lead at the mill, and two more coats after structure was completed. This long-wearing paint gave good service for 14 years! On the basis of this remarkable performance, Eagle Sublimed Blue Lead is now extensively used by the Department of Highway Bridges and Tunnels on the steel maintenance of 350 bridges in Allegheny County.

A More Enduring Rust-Inhibitive Paint

Here's why more and more engineers every year are recommending Eagle Sublimed Blue Lead as the most efficient rust-inhibitive paint for all metal surfaces:

1 Being pure lead, it is more enduring—gripping metal surfaces tenaciously. Does not chip or peel.

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3 Chemically stops corrosion because of great basicity.

4 Brushes easily, flowing out like enamel. Painters like it.

5 Offers greatest economy. Lower in first cost than other high grade metal paints. Greater coverage—600 to 800 square feet per gallon. Saves 40 to 50% in material cost. Long lasting.

● You can buy Sublimed Blue Lead in paste form (pure lead ground in pure linseed oil) under the Eagle label—or in ready mixed form from reputable manufacturers. Send for descriptive booklet and free sample.

EAGLE *Sublimed* BLUE LEAD

BASIC SULPHATE OF LEAD, BLUE

EAGLE RED LEAD
Rapid-drying qualities make it ideal for rush jobs.

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The Eagle-Picher Lead Company, Dept. AA4 Cincinnati, O.
Please send me free sample of Sublimed Blue Lead—also descriptive booklet on this more efficient rust-inhibitive paint.

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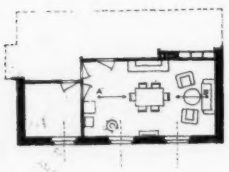

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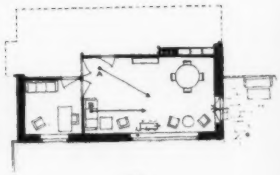

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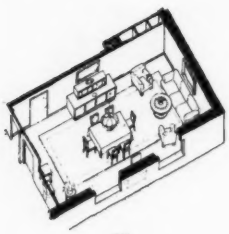

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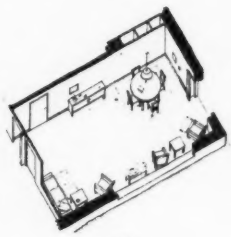

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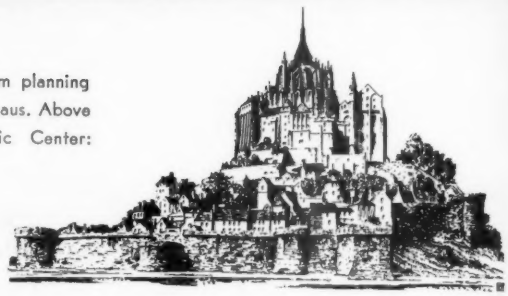
Above left: comparative room planning studies from Das Einfamilienhaus. Above right, Newton, Mass., Civic Center: from Outline of Town and City Planning. Right, sketch of Mont Saint Michel from Catholic Art



DAS EINFAMILIENHAUS

By Alexander Klein. Published by Julius Hoffman, Stuttgart. Illustrated; indexed; 130 pages; size 9 x 11½; price RM 12.

POTENTIALLY useful to all architects interested in low cost houses and housing developments, this book contains 450 illustrations comprising plans, elevations, sections, interiors, models and photographs of small homes. Special attention is given to problems of orientation, space economy, planning in relation to landscaping, and neighborhood development plans.

Like many German books, this volume is compiled with admirable thoroughness. The illustrations are largely self-explanatory and the reader should not be greatly hampered by a possible inability to read the German text.

OUTLINE OF TOWN AND CITY PLANNING

By Thomas Adams. Published by the Russell Sage Foundation. Illustrated; indexed; 368 pages; size 6 x 9; price $3.00.

HERE is an authoritative, comprehensive, and readable review of past efforts and modern aims in developing "planned environments" that should prove valuable to the city-planner, architect, and student alike. It opens with an outline of the development of city planning from ancient times up to the present; continues with a much fuller treatment of modern tendencies, and closes with an illuminating appraisal of future possibilities. The foreword is by Franklin D. Roosevelt.

Mr. Adams, a Fellow of the Royal Institute of British Architects, is associated with the City Planning Schools of M.I.T. and Harvard University. In thirty years of practical experience he has made distinguished contributions to this field in the United States, Canada and England.

CATHOLIC ART

Published bi-monthly by Catholic Art Publishing Co., Omaha, Nebraska, R. F. Hennig, Editor. Illustrated; size 6¼ x 9¼; price: single copies, 60 cents; yearly subscription, $3.00; Canada, $3.25.

THE first issue of this new publication contains 39 pages devoted to "Catholic Art and the Gothic Spirit." The editorial content, which concerns itself largely with the sources of inspiration of Gothic architecture, is illustrated with drawings by Pennell, Goodhue, Castle and others.

DESIGN AND MEDIEVAL ARCHITECTURE

By Helen Rosenau, Ph.D. Published by B. T. Batsford, Ltd., London. Illustrated; indexed; 48 pages; size 6 x 9; price 2s. 6d.

THIS paper-bound volume contains three monographic studies which deal respectively with the orientation of thirteenth century churches, planning and architectural design of the period, and the status and methods of contemporary architects. Dr. Rosenau is a member of the staff of the University of Hamburg.

Her concise and scholarly addition to the literature of Medieval architecture is obviously the product of long and careful research. Dr. Rosenau's book will interest architects, for it sketches an absorbing background for the work of today.

UNDERSTANDING ARCHITECTURE

By H. Vandervoort Walsh. Published by Art Education Press, Inc., New York. Illustrated; indexed; 24 pages; size 9 x 12; price 50 cents.

A BRIEF but extraordinarily comprehensive work dealing with modern architecture. While intended primarily for use in the class-room, this book might be of interest to many architects and laymen as the reflection of an informed and authoritative point of view.

The author is well known as an architect and as Assistant Professor of Architecture at Columbia University.

AIR CONDITIONING FOR HEATING CONTRACTORS

Part V

Edited by S. Lewis Land; published by Heating, Piping and Air Conditioning Contractors National Association, 1250 Sixth Avenue, New York. Paper bound pamphlet, 4 x 7½; 30 pages; price 50 cents.

THIS is the concluding booklet in a series of practical lessons on air conditioning prepared primarily for contractors but of equal value to architects interested in acquainting themselves with the technique of this field. This lesson relates to steam jet refrigeration and ice cooling methods.

NEW CATALOGS . . .

Readers of AMERICAN ARCHITECT may secure without cost any or all of the manufacturers' catalogs described on this and the following page by mailing the prepaid post card printed below after writing the numbers of the catalogs wanted. Distribution of catalogs to draftsmen and students is optional with the manufacturers

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HEATING AND PLUMBING SPECIALTIES

607. . . . The plumbing, steam and hot water specialties manufactured by Penberthy Injector Company, Detroit, Mich. are cataloged in a loose-leaf portfolio of over 100 pages. Included are automatic and hydraulic injectors, hydraulic pumps, water heaters, gauges, automatic cellar drainers and electric sump pumps, water circulators, pressure and relief controls and valves for hot water heating systems. Construction details, dimensions, capacities, prices and other data are given.

NU-WOOD PLANK AND TILE

608. . . . The application of Nu-wood plank and tile to various types of interiors, including residences, hotels, restaurants, hospitals, schoolrooms, etc. is graphically presented in a new catalog issued by Wood Conversion Company, St. Paul, Minn. Instructions on the application of this material and specification data are included. Several pictures of typical installations are shown in full color. Twelve patterns are also illustrated.

CHASE EXTRUDED SHAPES

609. . . . An excellently prepared spiral-bound manual which presents the information necessary for specifying Chase architectural bronze and nickel silver in extruded form has been published by Chase Brass & Copper Co., Inc., Waterbury, Conn. Photographs and detail drawings show actual applications of these extruded shapes to various problems of design. A table of weights per lineal foot of brass and copper strip and sheet, and a discussion of drawn shapes are also included. Filing size; 112 pages; A. I. A. File Q-1.1.

KAWNEER SEALAIR WINDOWS

610. . . . The Kawneer Company, Niles, Michigan, has issued a 24-page catalog which describes and illustrates the many features and advantages of Kawneer Sealair windows in aluminum or bronze alloys for commercial and public buildings, residences, ships and other transportation units. Typical details are given for Sealair casement, weight-hung and light weight-hung windows. The booklet is profusely illustrated with pictures of projects which have used Sealair products. Filing size; A. I. A. File 16-E-1.

WOOD PRESERVATION

611. . . . The subject of wood preservation has been comprehensively treated in a new booklet published by Tennessee Eastman Corp., Kingsport, Tenn. It deals with the protection of wood against decay, dry rot and termites. Various methods of preservation with No-D-K natural wood creosote and definite recommendations for different types of construction are given.

ALUNDUM CERAMIC MOSAIC TILE

612. . . . A new six-page broadside issued by Norton Company, Worcester, Mass., illustrates three typical installations of Alundum ceramic mosaic tile, and gives a number of suggestions, reproduced in full color, for combining the nine colors in which these tile are available in fields, borders, and letter and numeral insertions. Filing size; A. I. A. File 23-A-1.

P & S WIRING MATERIALS

613. . . . The twenty basic types of interchangeable wiring devices in the P&S-Despard line, and other electrical materials manufactured by Pass & Seymour, Inc., Syracuse, N. Y., are illustrated and described in general catalog No. 32 issued by this company. Dimensional data, wiring diagrams, methods of installing P&S-Despard devices in mounting strap, suggested combinations, etc. are included. Filing size; A. I. A. File 31-C-7.

GYPSUM PLASTER

Two new publications have just been issued by Gypsum Association, Chicago.

614. . . . Standard Specifications for Gypsum Plastering: This publication gives complete specifications covering the mixing and application of the different kinds of gypsum plasters applied to various bases. There are also included specifications covering the mixing and application of the usual type of finishes commonly employed. Filing size: 12 pages; A. I. A. File 21-A-2.

615. . . . The Fire Resistance of Gypsum Plaster gives factual information on the fire protection afforded by gypsum plaster taken from reports of fire tests conducted by Underwriters' Laboratories and by the Bureau of Standards. Filing size; 8 pages; A. I. A. File 21-A-2.

FRIGIDAIRE REFRIGERATORS

616. . . . The Frigidaire 1935 line of household refrigerators is presented in a new 40-page consumer catalog issued by Frigidaire Corporation, Dayton, Ohio. Divided into four series—Standard, Master, Super and De Luxe—the Frigidaire line includes 16 models, each incorporating the "Super Freezer" principle of refrigeration.

MIRRORS AND HEALTH GLASS

617. . . . A group of small folders has been prepared by Semon Bache & Company, New York, describing the features of Evalast mirrors. (A. I. A. File 26-C). A similar group pertains to Sunlit ultraviolet health glass.

NO POSTAGE REQUIRED ON THIS CARD

AMERICAN ARCHITECT — April 1935
New York City

Please have the following catalogs reviewed in this issue sent to me.

Numbers .....

.....

• I also desire further information about the new products described in this month's "New Materials and Equipment." . . . (See pages immediately following this insert.)

Numbers .....

• I would like to have catalogs and information concerning the following products advertised in this issue. (Write page number or name.)

.....

Name .....

Firm name .....

Address .....

City .....

Occupation .....

These NEW Catalogs may be obtained through AMERICAN ARCHITECT

Sturtevant Fans

B. F. Sturtevant Company, Hyde Park, Boston, has issued two new catalogs.

618. . . . Silentvane Fans, design 5, (Catalog 381-1)—This 68-page manual gives complete information about Silentvane Fans for exacting ventilating projects in large buildings, auditoriums, vehicular tunnels and industrial applications, including performance and dimension tables, standard designation of fans, fan arrangements and specifications.

619. . . . Multivane Fans, design 6, (Catalog 271-1) The content arrangement of this manual is similar to Catalog 381-1 above listed, the data applying to Multivane Fans used in the heating, ventilating and air conditioning of public buildings, such as hotels, schools and office buildings. Filing size, 44 pages.

Parker Valves

620. . . . Representative types of valves manufactured by the Parker Appliance Company, Cleveland, Ohio, are illustrated and described in its new 60-page catalog (No. 38) just issued. Dimensions, specifications, and list prices are given.

Airtemp Air Conditioning

621. . . . A general discussion of air conditioning and how it is achieved by the use of Airtemp air conditioning equipment is contained in a 20-page, filing-sized catalog issued by Airtemp, Inc. (a division of Chrysler Motors), Chrysler Building, New York. A series of installation diagrams illustrate the application of Airtemp units to various types of projects. Airtemp heavy duty compressors for air conditioning are described in a 4-page supplement.

Industrial Rubber Goods

622. . . . A new booklet of engineering data, designed to simplify the selection of belting, hose, and other mechanical rubber goods for industrial service, has been compiled by The B. F. Goodrich Company, Akron, Ohio. A section on transmission belting contains a review of belting requisites for a wide variety of uses as well as helpful tips on installation procedure. This 24-page booklet is illustrated with many photographs and diagrams, and contains glossaries, tables and other technical data.

Frick Refrigeration

623. . . . Of primary interest to marine architects, Bulletin No. 530-A issued by Frick Company, Waynesboro, Pa. illustrates various sea-going vessels which have used Frick refrigeration and describes the types of equipment suitable for this purpose.

Gar Wood Oil Burners

624. . . . Gar Wood oil burners for all types of heating systems are briefly described in a four-page catalog issued by Gar Wood Industries, Inc., Detroit, Mich. Specifications are included. Filing size; A. I. A. File 30-C-1.

Type E Stoker

625. . . . A sixteen-page catalog, No. E-8, describing the Type E center-retort, underfeed stoker, has been issued by Combustion Engineering Company, New York. It contains complete information on every phase of the stoker's construction, operation and control. An introductory chapter on the economics of buying a stoker and numerous diagrams showing typical ash pit and air duct arrangements, as well as applications of the stoker to various types of boilers, have been included.

Pittco Store Fronts

626. . . . Pittsburgh Plate Glass Company, Pittsburgh, Pa. has issued a 24-page booklet designed for consumer use, which illustrates a variety of stores and shops which have used Pittco Store Fronts, describes this type of construction, and lists the products it manufactures for store front projects.

The Nesbitt Syncretizer

627. . . . A loose-leaf portfolio containing five sections of engineering data covering the three types of units in the Nesbitt Syncretizer Series 400 line for controlling relationship of air-stream and room temperatures, has been issued by John J. Nesbitt, Inc., Holmesburg, Philadelphia. Capacities, temperature control methods, and specifications for each type of unit are given. Detail drawings show standard grilles, dimensions and applications. Filing size; A. I. A. File 30-D-11.

Delco-Heat Products

628. . . . Delco-Heat Conditionairs, boilers and oil burners are described and illustrated in a 16-page reprint from Sweet's Catalogs issued by Delco Appliance Corporation, Rochester, N. Y. Cross-section and cut-away views of the Conditionair are shown in colored reproduction. The automatic controls used in connection with these units are also discussed.

Conveyors

629. . . . The features of construction and design of the various types of Lamson conveyors are enumerated in a 24-page catalog issued by The Lamson Company, Syracuse, N. Y. Units illustrated and described include common types of package handling conveyors, food and dish conveyors for hotels, restaurants, etc., and pneumatic tubes.

Air Conditioning Equipment

630. . . . Air Conditioning Utilities, Inc., New York, factory representative for a group of manufacturers of air conditioning equipment, including controls, recorders, air filters, forced air registers, grilles, blowers, washers, flexible hose, has issued a portfolio combining catalogs of these concerns under one cover. The various items are fully described and illustrated, with dimensions, prices, ratings and other data included.

Hemco Wiring Devices

631. . . The Bryant Electric Company, Bridgeport, Conn., has issued Bulletin No. 13 which illustrates and describes its line of Hemco wiring devices and cord sets. Up-to-date list prices are given for all items.

Motors

632. . . . The Louis Allis Co., Milwaukee, Wis., issues every other month a 24-page company magazine for those interested in the purchase or maintenance of electric motors. The magazine is printed in colors and not only contains engineering data and technical articles on electric motors and equipment but also presents others of general interest.

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BRIEF REVIEWS OF MANUFACTURERS' ANNOUNCEMENTS TO KEEP THE ARCHITECT INFORMED OF NEW PRODUCTS

New Materials and Equipment

Coaster Drafting Chair and Lights

427M A coaster-type chair for drafting tables and a battery of coaster lights for illuminating drafting boards has been developed by Hamilton Mfg. Company, Two Rivers, Wis. Front legs of the chair are supported on a lateral track attached to the drafting table, with ball-bearing fibre wheels running in a channel guide. This not only permits lateral movement in front of the drafting table, but also a forward and backward movement through a pivot in the lower part of the frame. The coaster lights consist of three adjustable lights attached to a ball-bearing, rolling unit which runs in a channel at the back edge of the drafting board. In addition to the sidewise movement, each lamp may be swung in a circle to illuminate any particular area.

Convertible Motors

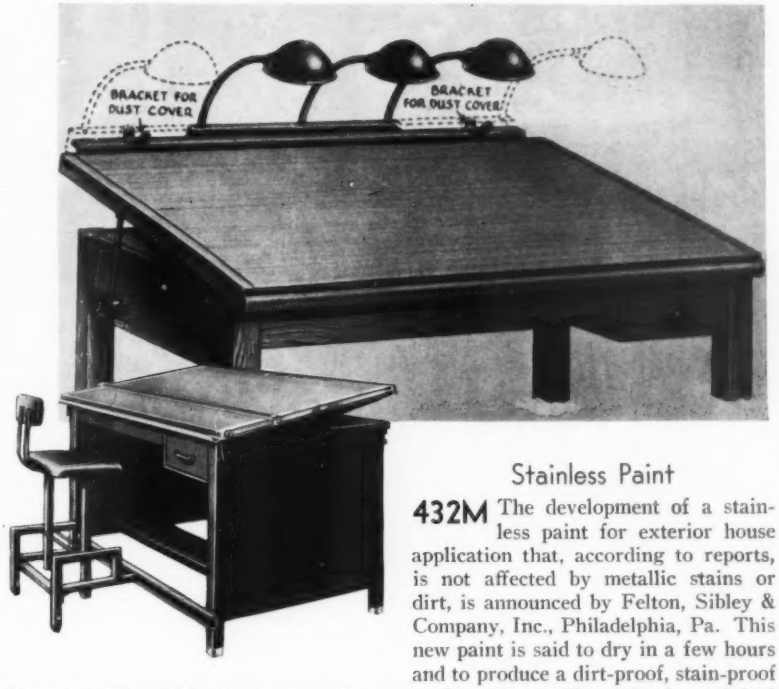
428M A new line of convertible squirrel cage and slip ring induction motors, offering all standard frequencies for service ranging from 110 to 220 volts, has been introduced by the Harnischfeger Corporation, Milwaukee, Wis. The feature of these motors is their convertibility from open type to fan cooled, splash-proof or totally enclosed construction. This is accomplished through the design of the frame, and heads and bearings.

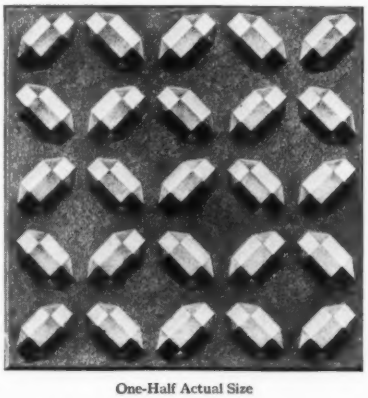
Acid-proof Cement

429M A new quick-setting acid-proof cement known as Sauer-Eisen Acid Proof Cement No. 21, has been developed by Technical Products Company, Pittsburgh. It consists of a white powder of high silica content which is mixed with water to a smooth, creamy consistency, hardening in 36 hours by chemical set into a acid-proof, porcelain-like structure. The cement has an initial "set" which is rapid enough so that the laying of bricks may be continuous. It is also resistant to water, fumes and many solvents, including fire.

Vaporproof Reflector Globes

430M For certain conditions in chemical plants, distilleries and breweries where excessive dust and fumes make cleaning difficult, the Holophane Company, Inc., New York, has added Model No. 02368 to its line of vaporproof reflector globes. This unit is smooth on both outside and inside surfaces, and has a distribution curve between 40 and 55 degrees.





One-Half Actual Size

Multigrip Floor Plate

431M Multigrip, a new floor plate for anti-skid surfaces, has recently been introduced by the Illinois Steel Company, Chicago. The design of the plate has been developed to assure a high degree of skid resistance from every angle. Risers are scientifically distributed and flat on top. The pattern is continuous regardless of the manner in which adjoining plates are laid.

Stainless Paint

432M The development of a stainless paint for exterior house application that, according to reports, is not affected by metallic stains or dirt, is announced by Felton, Sibley & Company, Inc., Philadelphia, Pa. This new paint is said to dry in a few hours and to produce a dirt-proof, stain-proof surface that will retain its original qualities throughout its life.

Summer-Winter Thermostats for Air Conditioning

433M Julien P. Friez & Sons, Inc. Baltimore, Md., have developed a range of thermostats designed specially for air conditioning installations. These instruments have summer-winter manual switches built into the instrument case and already interwired so that all types of heating and cooling equipment can be operated from one unit in all seasons. Changing position of the summer-winter switch reverses the action of the electrical contacting within the instrument so that the heating or cooling equipment is put in operation on falling or rising temperature. Switches are either of the ordinary toggle type or can be furnished for key operation. The units are sensitive to temperature changes as low as plus or minus ½°F.

Pressure Fire Extinguisher

434M A new 2-quart vaporizing liquid fire extinguisher that is discharged by air pressure and delivers a fan-shaped spray as well as a solid stream, has just been announced by Pyrene Manufacturing Co., Newark, N. J. The top and bottom castings

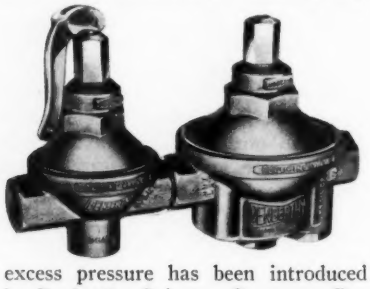
of this copper and brass unit are securely fastened to an inner and outer seamless shell, forming two chambers. The inner holds air under pressure, and the outer contains fire extinguishing liquid. It is operated by opening the operating valve on the top of the extinguisher and controlling the combination discharge nozzle. The nozzle can be adjusted to produce a solid stream or a fan-shaped spray.

Ilg Spot Kooler

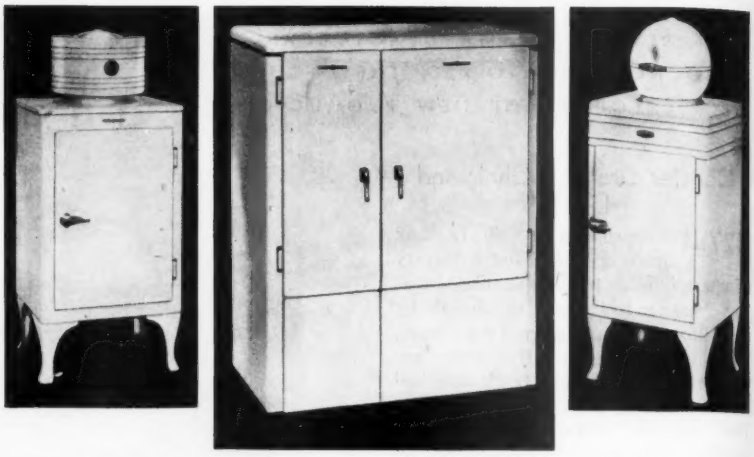
435M The new Model No. 11 Spot Kooler just announced by Ilg Electric Ventilating Company, Chicago, Ill., is a self-contained cooler and dehumidifier suitable for use in offices, homes, small shops, restaurants, etc. The unit is equipped with a water-cooled compressor located in the base of the grained metal cabinet, with the fan and coil in the top. A circular adjustable grille provides concentration of cooled air in any direction. The only connections required are to the electric light circuit and to water supply and return lines. It is 42¾" high, 29¼" wide and 18½" deep.

Pressure and Relief Control

436M A combination unit used for automatically keeping a hot water heating system filled with water and for automatically relieving any

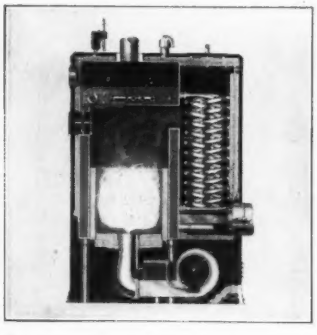


excess pressure has been introduced by Penberthy Injector Company, Detroit, Mich. It is made of high grade steam bronze, has extra large capacity, and is recommended when quick filling of the system is desirable. It complies with the A. S. M. E. Code.



G-E Refrigerators

437M Several new models have been added to the 1935 line of domestic refrigerators manufactured by General Electric Company, Nela Park, Cleveland. These include a 4-cubic foot Monitor Top model, designed largely for apartment house use; a 6-cubic foot Monitor Top; and two large two-door Flatop models with capacities of 12 and 15 cubic feet. All of the fourteen domestic models in the line, with the exception of the two large Flatops, are now equipped with hermetically sealed refrigerating units. A mechanical improvement incorporated in all models is forced oil cooling. The method employed provides not only for forced oil lubrication but utilizes the same oil for cooling the motor.



S-N Oil Furnace

438M The latest model of the S-N Oil Furnace, manufactured by Scott-Newcomb, Inc., St. Louis, Mo., can be had with either a vertical flame pressure atomizing type burner or a vertical flame low pressure air atomizing type. The boiler is made of copper bearing steel, electrically welded, and is insulated on the outside with air cell insulation. The combustion chamber is enclosed by specially moulded firebrick, and the products of combustion pass upward and then downward, leaving the stack at the coolest point in the economizer section. The economizer section consists of copper coils, which are removable, and has additional rock wool insulation. The boiler is made for either steam, hot water or vapor systems. It can be converted to gas heating by the use of the S-N Gas Burner.

York Portable Air Conditioner

439M A portable air conditioner, which provides for cooling, dehumidifying, cleaning, circulating and freshening the air in a room, has been developed by the York Ice Machinery Corp., York, Pa. The conditioner is designed for placement beside a window, and has a telescopic duct connection in the rear from which outside air is drawn for introduction into the room and for cooling the refrigerant condenser. Heat removed from the room air and moisture which results from dehumidification are both discharged to the outside through this duct arrangement. No water connections are required. The unit is encased in a cabinet with walnut panels and satin chrome trim, and is especially intended for single room applications.

Furnishings by **SLOANE'S**

CONTRACT DEPARTMENT

A charming 18th Century interior in the new Waldorf-Astoria Hotel, executed entirely by Sloane designers and decorators. *Architects:* Schultze & Weaver

WHEN planning new residential or business quarters anywhere in the United States, give thought to the unique and comprehensive service offered by Sloane's Contract Department. Our expert designers and decorators are equipped to relieve you of every worrisome detail, down to the most inconsequential items . . . planning the physical layout, creating the decorative scheme (including walls and floor coverings), selecting appointments to harmonize . . . executing the job in its entirety. It is here that the wide connections, unlimited resources and comprehensive stocks available at Sloane's play such an important part . . . in the interest of both efficiency and economy.

IN ALTERATIONS . . . you will find it to your good advantage to have our Contract Department take care of the building of partitions and laying linoleum.

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Make the Store

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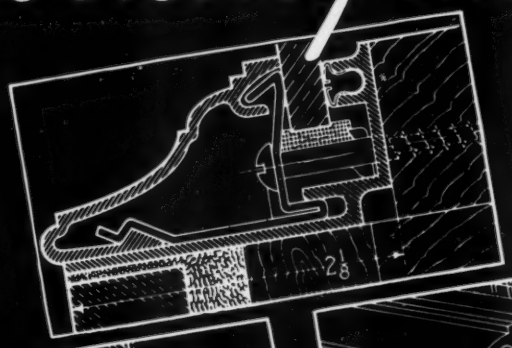
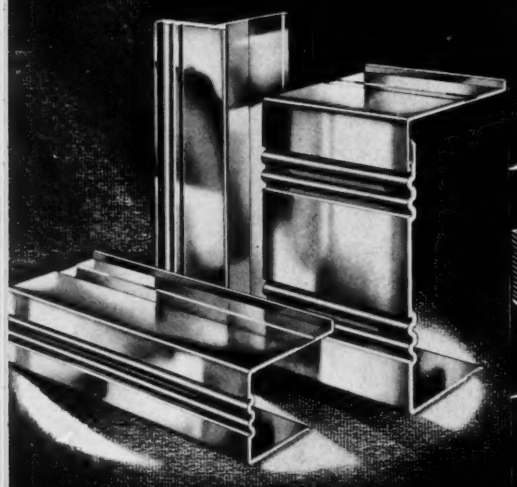
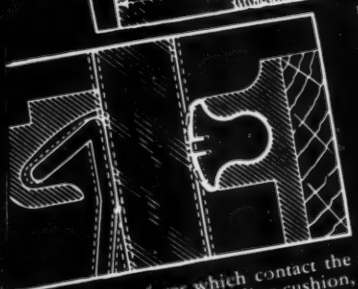


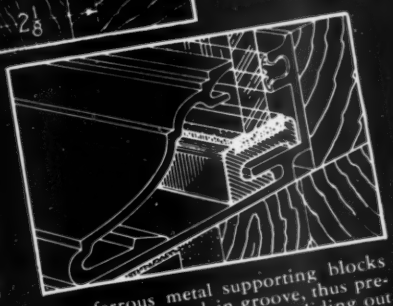
Full size cross-section of Pittco Sash.



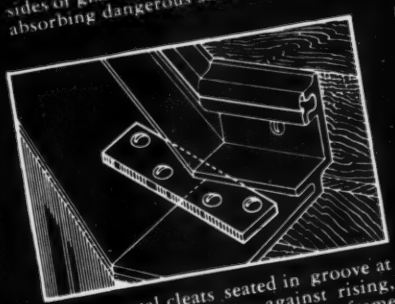
Unity of design
in all mouldings



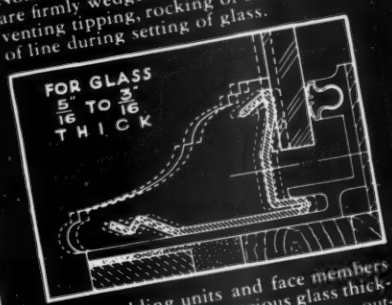
The metal surfaces which contact the sides of glass act as a yielding cushion, absorbing dangerous shocks and jars.



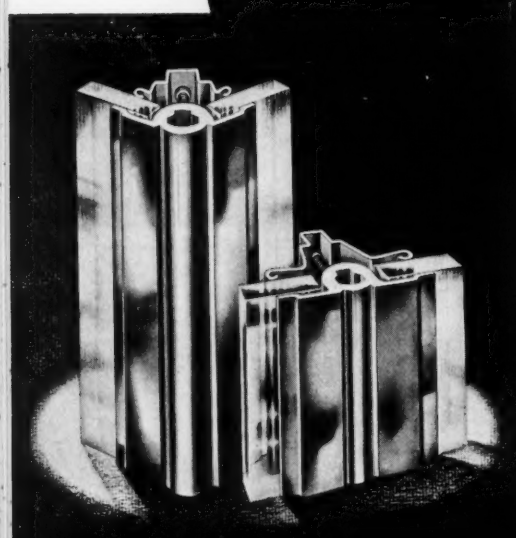
Non-ferrous metal supporting blocks are firmly wedged in groove, thus preventing tipping, rocking or sliding out of line during setting of glass.



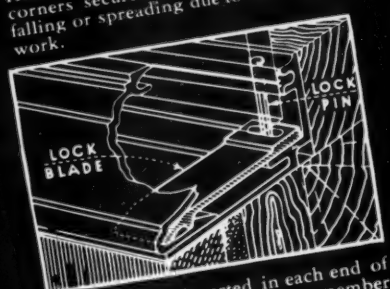
Heavy metal cleats seated in groove at corners secure miters against rising, falling or spreading due to faulty frame work.



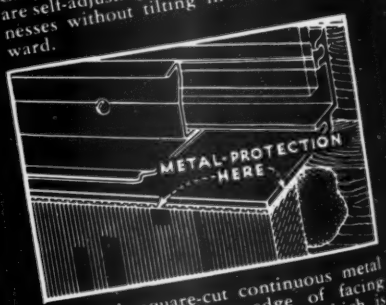
Glass-holding units and face members are self-adjusting to various glass thicknesses without tilting inward or outward.



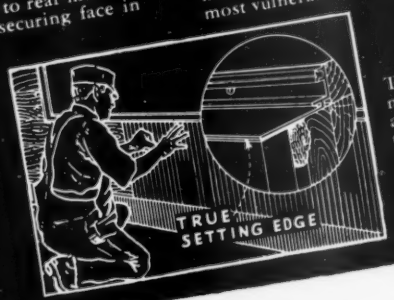
Trim Vertical Bars
adjustable to all angles



A metal blade inserted in each end of face and locked by pin to rear member is an extra means of securing face in position.



A sturdy square-cut continuous metal flange projects over edge of facing material, shielding the area which is most vulnerable.



The outer edge of inner member serves as a true, unvarying line to which face of structural material is set.

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STORE FRONT METAL

PITTCO Store Front Metal . . . here's a development in store front construction that's NEWS to every architect who expects to design a store front!

News . . . because Pittco is probably the first complete line ever to be designed deliberately, all at one time, with a pleasing harmony and relationship of appearance, a real *unity* of design. News . . . because all exposed members of Pittco are formed only by the extruded process, to assure clear-cut contours, mechanical accuracy, greater strength. News . . . because Pittco's unusual depth of sash and good-looking lines set off a show window like a picture frame sets off a picture. News . . . because Pittco's double yielding cushion grip on glass brings greater protection to plate glass against jars, strains, breakage. News . . . because Pittco affords new convenience, new protection for costly finishes, by permitting plate glass to be set in rear members of sash, show window to be prepared for use, and building face to be washed down, before outer members of sash are applied. News . . . because Pittco vertical bars are adjustable to all angles. And news . . . because Pittco is available in the best-looking, most durable finishes you could desire . . . Alumilited Aluminum and Architectural Bronze, Satin or Polished finish.

Pittco Store Front Metal has everything . . . a rare combination of beauty and practical qualities which helps you to design better store fronts than ever before! You'll want to know all about Pittco before you start on your next store front job. So ask our nearest warehouse to give you a demonstration. And send the coupon below . . . today . . . for our A. I. A. File Folder containing complete information on Pittco, as well as a full set of details showing various applications of Pittco Store Front Metal including its use with Carrara Structural Glass.

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Pittsburgh Plate Glass Company
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Please send me without obligation on my part your folder containing full information on Pittco and detail drawings.

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FIRM _____

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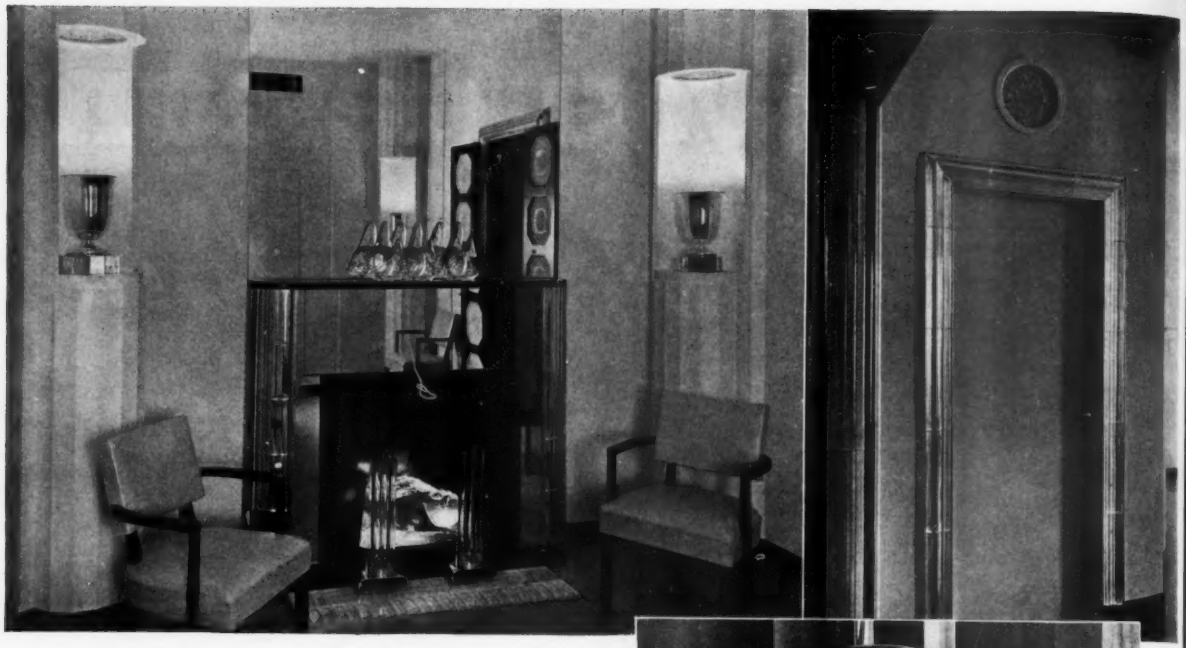

ARCHITECTURAL GLASS DISPLAY . . .

One of the most modern of architectural materials is now on display at the new show rooms of the Corning Glass Works' Architectural Division at 748 Fifth Avenue, New York. Lighting ideas are almost as important as the great variety of glass forms. Rheostat switches and separate circuits make it possible to vary lighting intensities or to use color at will. **Above:** left, fireplace made entirely of glass, even to the hearth and andirons; right, glass trim, moulded in a variety of forms, can be made particularly effective with skillfully applied backlighting. **Right:** cast and etched lighting globe, a duplicate of those used in the Rockefeller Center Music Hall, New York

Trends and Topics of the Times...

(*Continued from page* 55)

• Mission of the FHA for 1935, according to a recently issued statement: "1. *To make known* the fact that credit to finance repairs and modernization, which may be repaid in installments out of income, has become a tangible reality. 2. *To encourage* all property owners to make careful inspection of buildings and grounds to determine what repairs and upkeep are required. 3. *To bring about* an accompanying rebirth of sales and production activity in the building and building materials industries, with resulting increase in employment, decrease in the burden of the public relief rolls and general toning up and increase in business and employment."

• Safety note: laminated glass is being used in a hospital in Los Angeles in the doors and windows of the psychopathic wards, nurseries, and in all swing- and revolving doors.

• From England comes the first annual report of The Institute of Registered Architects. This organization was started in August, 1933, to publicize English architects and to promote their interests, regardless of their other professional affiliations. Actually the Institute is a high type of public relations body. Its activities have included during the past year press notices and advertisements in 25 of the newspapers throughout the United Kingdom. These were addressed to the public and stressed the value of architectural service for buildings of all kinds. Sir Edwin Lutyens is president of the new professional body. (*Continued on page* 106)

EIGHTH ANNUAL
SMALL HOUSE COMPETITION
CONDUCTED BY HOUSE BEAUTIFUL

The submission of material in the Small House Competition will be taken as an acceptance of the conditions as set forth below. The competition closes October 15, 1935.

This competition, the eighth to be conducted by House Beautiful, calls for photographs and plans as specified in the accompanying conditions of houses built recently in the United States and not published in a national magazine (architectural magazines excepted). In addition there is a special class for remodeled houses.

Prize-winning and Honorable Mention houses will be published in this magazine beginning with the January, 1936, issue, and as in previous years, an exhibition of photographs and plans of fifty houses, both new and remodeled, will be featured prominently in the larger cities during 1936.

The houses will be judged and prizes awarded in three classes as follows:

CLASS I
For new houses only, of 8 rooms and under:
1st Prize.....$500
2nd Prize.....$300

CLASS II
For new houses only, of 9-12 rooms:
1st Prize.....$500
2nd Prize.....$300

CLASS III
For remodeled houses of not more than 12 rooms:
Special Prize.....$300

In addition to these Prizes an Honorarium of $50 will be paid for each house (with the exception of the prize houses) accepted for pubcation in HOUSE BEAUTIFUL. This applies to both the new houses and the remodeled houses.

These will be judged by a jury of five, containing three members of the American Institute of Architects; Arthur H. Samuels, editor of House Beautiful; and Ethel B. Power, who will conduct the competition.

The new houses will be judged on the following principal points:

1. **Excellence of design.**
2. **Economy in space and convenience and plan**
3. **Adaptation to lot and orientation**
4. **Skill in use of materials**

The remodeled houses will be judged on the following points:

1. **Excellence of design**
2. **Skill and economy in adapting space to new demands and in solving special problems.**

GENERAL CONDITIONS

1. This competition is open to all architects and architectural designers, and each competitor may submit as many houses as he desires.

2. The house submitted may be of any stle and of any material.

3. It may be of one, two or three stories, and may contain, as noted above, up to twelve rooms. Breakfast-rooms, pantries, baths, dressing-rooms, halls, laundries, and inclosed porches will not be counted as rooms.

4. The contestant's name and address shall not be put on the front of the mount, but shall be written on the back of each mount, and a piece of paper, pasted around the edges, placed over it. On the back shall also be pasted an envelope, containing a plain card, 3" x 5" in size, clearly lettered with the name and address of the architect. Any house which the contestant does not wish to be exhibited should be plainly marked on the back of the mount, "Not for Exhibition." Otherwise we shall consider that we have his consent to exhibit his photographs.

5. On the lowest part of the mount shall be put, in one or two lines and nicely lettered, the inscription, "Submitted in the Contest Held by House Beautiful." In the upper right hand corner shall be left space for a card 3" x 5" which will display the architect's name if the mount is selected for exhibition.

6. All photographs and plans entered in this competition and chosen for either publication or exhibition shall remain in our possession until after the exhibition. We request that houses entered in this competition be not submitted to any other magazine until after they are released by us. All contestants will be notified of the awards soon after they are made, and those whose houses are not selected for either publication or exhibition may withdraw them by sending the necessary notification. Entries will be returned express collect. Contestants whose houses are exhibited will be notified when the exhibitions are over. If they desire, their photographs will then be returned to them upon the payment of the necessary transportation charges.

7. To insure better reproductions, glossy prints of those photographs to be published in House Beautiful will be requested from the architects. (Additional views in readiness are desirable.) It will be considered that the prizes or the honorarium of $50, which will be allowed for other than the prize houses that are published, will cover the expense of these prints.

8. All entries should be carefully packed with stiff board for protection and shipped express prepaid to the House Competition Editor, House Beautiful, 572 Madison Avenue, New York. The competition closes Tuesday, October 15, 1935.

SPECIAL CONDITIONS FOR NEW HOUSES

There must be presented:

a. Three photographs of the house:
   1. General view of the front
   2. Exterior detail
   3. Interior detail

Two photographs are to be at least 8" x 10" and the third at least 14" x 18", all preferably in soft buff finish. The large picture should be of the general view of exterior detail.

b. First floor plan on plot plan; second floor plan; drawn in ink at any convenient scale, and pochéd, with rooms plainly labeled and dimensioned and orientation indicated.

c. Legend giving the following information:

1. Name of owner (not obligatory)
2. Location of house
3. Composition of family
4. Special problems considered
5. Short description of interior shown, including furnishings
6. Approximate cost, either total or per cubic foot (not obligatory but desirable)
7. Type of construction
8. Material and color of outside walls, roofs, trim, door and blinds
9. Name of product or manufacturer or both of following:
   Floors, windows, insulation
   Plumbing system (pipes and fixtures)
   Heating system (boiler, hot water heater, air conditioning)
   Miscellaneous equipment (refrigerator, ventilators, range, kitchen cabinets, hardware, etc.)

d. Photographs, plans and legend must all be mounted on one piece of beaver board, or a similar heavy mount, 30" x 40" in size, preferably of light buff or cream color.

e. Set of blue prints showing the four elevations of the house. These should be folded and placed in an envelope pasted to the back of the mount. They must not give name of architect.

SPECIAL CONDITIONS FOR REMODELED HOUSES

a. Photograph of house before remodeling.

b. First and second floor plans of house before remodeling.

c. Two photographs of house after remodeling, including one general view.

d. First floor plan on plot plan and second floor plan of house after remodeling.

e. Legend giving the same information as requested for new houses, substituting description of original house for description of interior.

f. The floor plans may be drawn at any convenient scale and should be pochéd. The rooms should be plainly labeled and dimensioned. The photograph of the house before remodeling may be of any size. The two photographs of the house after remodeling should not be smaller than 8" x 10" in size, and it is suggested that one of these be enlarged to a size that will fit conveniently onto the mount. These photographs, plans and legend must all be mounted on one piece of beaver board, or a similar heavy mount, 30" x 40" in size and preferably of light buff or cream color.

g. Set of blue prints showing the four elevations of the remodeled house, also of the house before remodeling (if available). These should be folded and placed in an envelope pasted to the back of the mount. These blue prints must not contain the name of the architect.

Additional copies of this announcement may be had upon application to the address given below.

HOUSE BEAUTIFUL, 572 Madison Ave., New York City

HOUSE
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ROCK WOOL
INSULATION

safeguard their health

Enfold the home in a thick, woolly blanket of Gimco Rock Wool. . . .

Result . . . a really comfortable home the year 'round regardless of outside temperature. Living conditions are decidedly improved . . . drafts, cold floors, cold walls . . . "bake-oven" bedrooms are eliminated. Children play in comfort in any part of the house . . . slumber peacefully on the hottest night.

Gimco granulated wool is especially processed and refined for "blowing" into wall spaces and attic floors in the old home. Gimco "Bats," a remarkable advance over similar products, are designed for the home in process of construction.

Gimco Finance Plan

Based upon the provisions of the N.H.A., the Gimco (non-recourse to dealers) Finance Plan makes it possible for home owners to enjoy "real home comfort" at a moderate sum per month.

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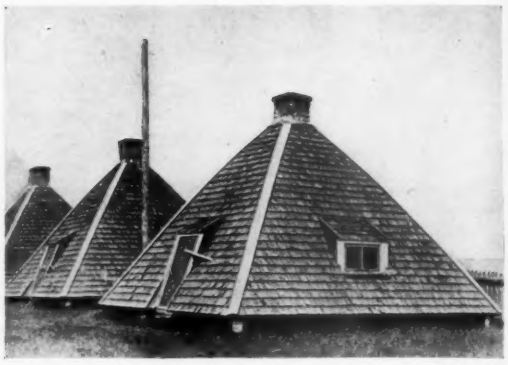
OUR CATALOG IS FILED IN SWEET'S

Gimco architects and engineers have prepared clear, concise technical data especially for the architect interested in specifying *adequate* insulation. Just write a line on your letterhead.

GENERAL INSULATING & MFG. CO., Alexandria, Ind.

WORLD'S LARGEST EXCLUSIVE MANUFACTURERS of ROCK WOOL PRODUCTS



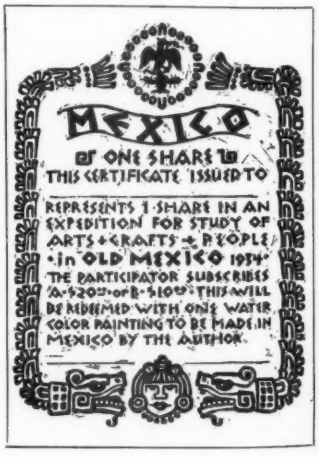
KEYSTONE

Not chicken coops—but a primary schoolhouse in the Lappish district of Kiruna, in northern Sweden! Each pyramid is the roof of a separate classroom. The rooms themselves are underground so pupils and teachers can keep warm during bitter cold winters

• Dark interior courts in old style apartment buildings which real estate agents hopefully call "light wells," will lose their gloomy aspect if the idea deveoped by Clifton E. Smith, a New York consulting engineer, is generally adopted. He has installed floodlights at the ninth floor level of two ventilating shafts in a typical apartment building, arranging these with automatic dinner controls which turn them on gradually when natural light fails. The result produces a remarkable similarity to natural sunlight and brings new cheer to apartment dwellers whose rooms face these courts.

• Colonel F. Charles Starr, formerly general manager of the architectural firm of Schmidt, Garden & Erikson, has been appointed manager of the PWA low-rent housing project in North Chicago. The new building group involves expenditure of $12,500,000 by the PWA Housing Division.

To finance an architectural and painting tour through old Mexico, Sherwood T. Allen, architect of Miami Beach, Florida, sold stock certificates redeemable with water color drawings of Mexico. Fourteen shares were sold. The artist and his wife traveled 7,000 miles in six months, visiting little known parts of the country » » »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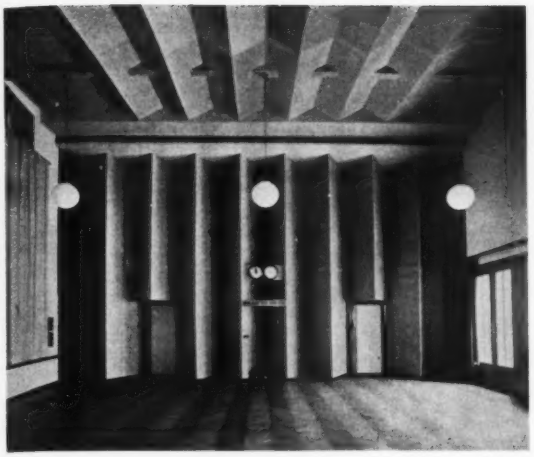
OF ONE SHARE IN
THIS CERTIFICATE ISSUED TO
REPRESENTS 1 SHARE IN AN
EXPEDITION FOR STUDY OF
ARTS + CRAFTS + PEOPLE
IN OLD MEXICO 1934
THE PARTICIPATOR SUBSCRIBES
A $200 OR $100 THIS WILL
BE REDEEMED WITH ONE WATER
COLOR PAINTING TO BE MADE IN
MEXICO BY THE AUTHOR

• At a luncheon of Detroit architects recently, F. E. Ritzenheim, of the Air Conditioning Division of Gar Wood Industries, Inc., suggested that every architect contribute a dollar toward a fund to do collective advertising. His suggestion is a good one.



GLOBE

Walls and ceiling of this broadcasting room in the new Koenigsberg, Germany, radio station stand obliquely to one another to prevent oscillation of structural members due to "standing" radio waves, easily formed between parallel enclosing surfaces

But any advertising program should be continuous to be most effective. This means that planning for a period of time is essential. Cost might be a little higher, but results would be greater.

• A twice-told tale concerns a community that gave the Federal Government a $200,000 site for a $100,000 post office. Local architects were first retained. Then Government architects shaved the building cost to $47,000, thus offering the community a structure which was justly regarded as neither adequate nor beautiful. The unusual sequel to the story is this: the town said to the Government, "We refuse the gift. Give us more of a building or give us back our lot." So far the Government has done neither. And—if you're curious—the community was South Pasadena, California.

• The Northern California Division of the A. I. A. will hold its biennial exhibit this year in conjunction with the annual Building Exposition in San Francisco from May 4th to 12, inclusive. Architects who happen to be in that part of the country at that time should not fail to see it. California architects are well organized and well directed. Their show will undoubtedly contain much in the way of originality and showmanship that might be applied elsewhere to good effect.

• From expenditure of $150,000,000 originally allocated for low-rent housing by the PWA Housing Division, 40,000 living units will result, according to a recent report to Administrator Ickes by Col. Horatio B. Hackett, Director of the Housing Division. The average cost of the units would therefore be $3,750, apparently not an excessive figure, since in many instances this also includes the cost of extensive slum clearance.

AUTOMATIC COAL FIRING

Cut-away illustration of Ring-Drive Iron Fireman which feeds direct from bin to fire. Bin and Bunker feed models, as well as Hopper models, available in all sizes.

The HEATING *of* TODAY *and TOMORROW*

THERE is now a definite swing to coal firing. But it is not a swing *back* to the old kind of coal firing—it is a swing *forward* to the new type of automatic self-regulating coal firing pioneered and developed by Iron Fireman.

Comparative fuel cost figures shown here explain why Iron Fireman fired coal is the preferred fuel. These figures represent the average costs for these 6 fuels in 40 of America's larger cities. They show that Iron Fireman costs 29.8% less than hand-fired coal; 46% less than crude oil; 65% less than diesel oil; 80% less than gas at industrial rates, and 85% less than gas at domestic rates. These figures are general averages but they square with actual fuel cost savings which Iron Fireman installations have achieved in thousands of cases, and it is easy to obtain actual comparative fuel cost figures for any locality—any Iron Fireman sales office will help you compile them. Get these figures and estimate how much your client's savings will amount to during the life of his building. The total saving is astonishing!

There are other points of superiority in Iron Fireman heating, however, which are fully as important as the remarkable economy. Combustion is so nearly perfect that there is no smoke. Temperature is automatically regulated. Only a minimum of labor is required. The boiler room can be kept just as clean as with any other fuel—the stack and outdoor even cleaner. Installations can be made to feed direct from the coal bunkers. You will want all the new data on Iron Fireman automatic coal firing.

***Comparative Fuel Costs**

Type of Fuel	Cost per 100,000 b.t.u.	Iron Fireman Saving
Iron Fireman Coal	**1.65c**	
Hand-Fired Coal	**2.35c**	**29.8%**
Crude Oil (Industrial)	**3.07c**	**46 %**
Diesel Oil (Domestic)	**4.80c**	**65 %**
Industrial Gas	**9.05c**	**80 %**
Domestic Gas	**11.78c**	**85 %**

*Figures are average cost in 40 leading American cities for amount of fuel required to furnish one Therm (100,000 British thermal units).

IRON FIREMAN

The machine that made coal an automatic fuel

Pencil Points—Iron Fireman Architectural Competition just announced. Literature and Don Graf data sheets available from Iron Fireman at 3136 W. 106th Street, Cleveland, Ohio.

IRON FIREMAN MANUFACTURING COMPANY, Cleveland, Ohio; Portland, Oregon; Toronto, Canada.

STATE COLLEGE OF AGRICULTURE AND APPLIED SCIENCE LIBRARY APR 27 1935 MANHATTAN KANSAS

Readers Have a Word to Say . . . (Continued from page 94)

edge of the roofing material due to capillary retention of water between roofing and flashing within a period of 15 or 20 years; this can be eliminated by introducing a hardwood strip between the flashing and the edge of shingles or slates; and that lead may be used for flashings if not extended deeply into masonry joints, particularly those of portland cement mortars. British authorities find occasional failures due to the action of fresh mortars on lead. The material should not be used for through flashings; lime mortars after ageing are harmless; portland cement mortars are corrosive over a long period of time. Lead is still one of the most reliable materials if used with an understanding of its expansion and other properties.—Editor.

• BEST ARTICLES

Editor, AMERICAN ARCHITECT:

TWO of the best articles which I have read in any architectural magazine during the past year or more are first, "Contemporary Problems of the Architectural World," which you published in January, 1935, and "Pathways of the Sun," in November, 1934.

This is the kind of material, it seems to me, that modern architects need so badly to keep themselves abreast of the times and the leaders in the architectural field. I hope you continue to publish similar articles from time to time.—*Francis Keally, Architect, New York.*

• MORE APPLAUSE

Editor, AMERICAN ARCHITECT:

WE have received the 15 copies of "When You Build" and wish to compliment you most highly for this splendid exposition of the value of architectural services. I have never seen anything of the kind that can approach it. It is beautifully thought out and gotten up, the text is most convincing and it is well illustrated. It should be conducive to promoting a lot of work.—*Ellis J. Potter, Law, Law and Potter, Architects, Madison, Wis.*

AT the last meeting of the Tennessee Chapter of the American Institute of Architects, much favorable comment was made on advertising appearing in *Town & Country* and *House Beautiful.*

I wish you could have been present to hear some of the remarks in favor of these publications and expressing the individual appreciation of each member.

While there was no official resolution offered expressing this appreciation, I am taking it upon myself as President of the Chapter to thank your publishing company. It seems to fit in with the timely subject of selling the architect to the real building public, which is the house owner. *J. Frazer Smith, Pres. Tennessee Chapter of the A. I. A.*

• BROADCAST COMMENTS

Editor, AMERICAN ARCHITECT:

IT did my heart good to read your comments in the "As It Looks to the Editor" section of the March issue.

Every sub-head cut right to the quick of a very serious problem of the day. The "Old Game With Variations," "Keep Building Standards High," "Is This a Typical Case?" and "Tell the Client Quick" prefaced comments which should be broadcast all over the country.

The manner in which the Government is now promoting the type of construction that only jerry-builders were accused of a few years ago is extremely alarming. Sometimes we think that the only purpose is to get up as many buildings to show as much bulk of construction as possible, without regard to how these buildings are constructed or whether they will require an equal amount for upkeep within a year or so. It is extremely gratifying to find such sympathetic remarks in your editorial column.—*J. H. Hansen, Secretary, Brick Manufacturers Assn. of New York, Inc., New York, N. Y.*

New!

IT HINGES ON THIS—

The new conical adjustable spring on Jamison Adjustable Hinges—makes money and saves money for any user.

Pressure at the heel of the door is absolutely essential to prevent loss of refrigeration and inflow of warm, moist air.

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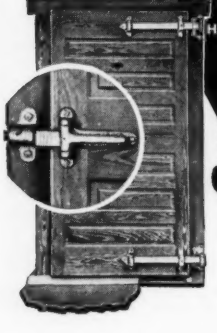
HAGERSTOWN, MARYLAND, U. S. A.



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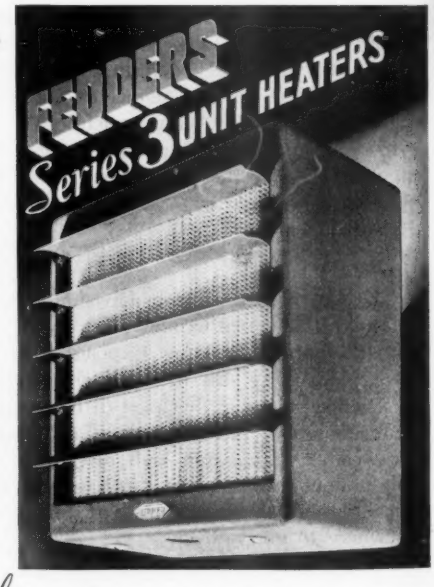

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CATALOG 527 takes them apart for you, write for it.

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MANUFACTURING COMPANY
57 Tonawanda Street Buffalo, N. Y.

The gracious proportions of an English Regency house replace the ugly lines of the well-built but graceless house below. Photographs are from a remodeling article by Dwight James Baum, F. A. I. A., in April Good Housekeeping.

Good Housekeeping urges Remodeling as an Investment

In almost every issue for the past two years or more Good Housekeeping has shown its 2,000,000 readers how, with the help of a good architect, ugly old houses can be enhanced in charm and value. No other magazine of large circulation is doing more to popularize the architect and increase the demand for his services.

Good Housekeeping

Everywoman's Magazine

25¢ a copy; $2.50 per year

• At New York University, the Council voted recently to raise the status of the Department of Architecture to that of an independent professional school. As head of the new School of Architecture and Allied Arts, Dean E. R. Bossange announced for the 1935 Summer Session, two courses in Modern Housing. One will be a lecture and seminar course; the other will be concerned with planning and design. Both will be under direction of Dr. Carol Aronovici, city-planning and housing expert. They are specially designed for architects, engineers and advanced students and carry University credit ratings upon proper application. Detailed information may be had from Dean E. Raymond Bossange, School of Architecture and Allied Arts, New York University, 1071 Sixth Avenue, New York.

• Dean George Young, Jr., of the College of Architecture of Cornell University, has announced a course in Design for the Summer Session that will stress the interrelation between architecture and landscape architecture. The course carries six hours of University credit and extends from July 8th to August 16th. Also available to eligible applicants are a University Fellowship, three Graduate Fellowships and five Scholarships in the College of Architecture. Further information and forms of application for the Summer Session courses and scholarships can be obtained by addressing The Dean, College of Architecture, Cornell University, Ithaca, New York.

• Graduates of the College of Fine and Applied Arts of the University of Illinois are eligible for the fourth annual award of the Kate Neal McKinley Memorial Fellowship. The award carries a stipend of about $1,000 to be used by the recipient during a year's study of the Fine Arts. Information regarding applications, which should reach the committee prior to June 1st, can be obtained from Dean Rexford Newcomb, College of Fine and Applied Arts, University of Illinois, Urbana, Illinois.

• Columbia University School of Architecture, through Dean Joseph Hudnut has announced formation of a town planning studio. Under direction of Henry Wright, students will receive practical instruction in the organization, expansion and rebuilding of cities. The course will be part of the Summer Session activities.

• Professor Emil Lorch, Director of the College of Architecture of the University of Michigan announces that summer classes in architectural design, working drawings, freehand drawing and painting, architecture and housing will again be given during the coming summer, from June 24th to August 16th.

Air Cooling and Conditioning

WITTENMEIER, a name associated with Refrigeration in all its phases and applications for over 35 years, offering complete Air Conditioning and Refrigeration Systems for industrial processes and bodily comfort, either in Central or Unit Systems from ¼ ton capacity up.

Refrigerants: CO_2-Freon-Amonia-Methyl Chloride-Steam - Water Vapor.

The Carbonic System, pioneered and developed by Wittenmeier, is classified as the safest of all present day methods. Why sacrifice Safety and Reliability for the extravagant claims and doubtful economies advanced for untried and unproven methods? In the face of these extravagant claims, Wittenmeier, during the season just passed, in the Chicago Area alone, installed fifteen theatre cooling jobs and in each instance, a carbonic (CO_2) Installation was made. The theatres ranged in size from 400 to 2000 seats.

Whether you are interested in conditioning a single room, office, shop, restaurant, bank, theatre, auditorium or large office building, there is a Wittenmeir System best suited for the purpose.

Let us make a survey of your requirements and give you our unbiased opinion of the system best suited for your needs. There is no obligation. Wittenmeier with Air Cooling and Conditioning Experience that dates back to 1908, can offer helpful suggestions. Architects, Engineers, Contractors and others should avail themselves of this service. After all, there is no substitute for Experience.

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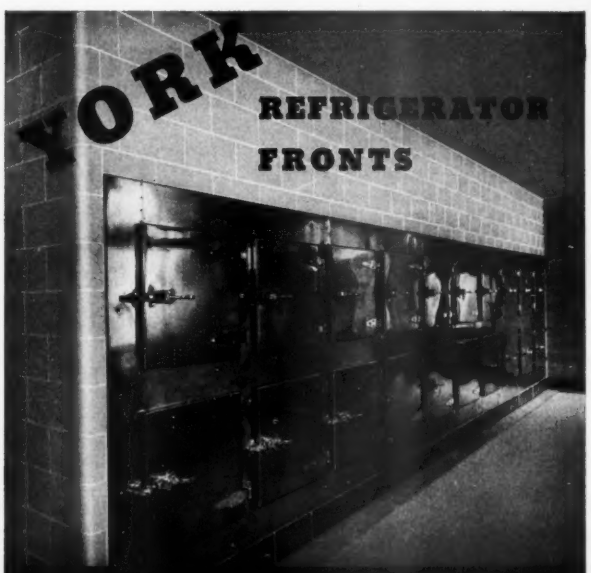


Built to order in sections of two doors up to any number required. Finished in any specified wood or metal, and equipped with special hardware. Correct design and rugged construction mean years of service. It will pay you to write for descriptive booklet.

YORK ICE MACHINERY CORPORATION, YORK, PA.

• Dates of the Sixty-seventh Convention of the American Institute of Architects have been changed from May 21st to 24th, inclusive to May 28th through May 31st. Headquarters for the Convention will be the Schroeder Hotel, Milwaukee, Wis.

• The Department of Architecture of the College of Fine Arts, Syracuse University, is offering five scholarships in architecture. The scholarships, which will be awarded by competition, may be held during the full five-year architectural course. One of them amounts to $300; the others are for $150 each. Information regarding eligibility and other rules may be obtained from Dean H. L. Butler, College of Fine Arts, Syracuse University, Syracuse, N. Y.

• The committee on competitions of the American Institute of Architects has approved the program for the selection of an architect to design the proposed building for the Federal Reserve Board in Washington.

Nine competitors were selected as follows: Arthur Brown, Jr., San Francisco; Coolidge, Shepley, Bulfinch & Abbott, Boston; Paul Philippe Cret, Philadelphia; Delano & Aldrich, John Russell Pope, James Gamble Rogers, Egerton Swartwout, and York & Sawyer, New York; Holabird & Root, Chicago.

The jury of award consists of Dean William Emerson of Massachusetts Institute of Technology; John W. Cross and John Mead Howells, New York; Frederic A. Delano, chairman of the National Capital Park and Planning Commission, and Adolph C. Miller, member of the Federal Reserve Board.

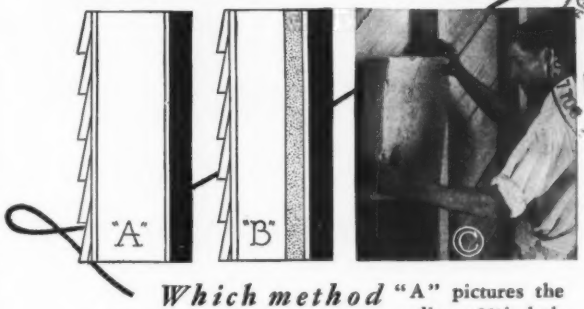
The building is to be erected on Constitution Avenue, adjacent to the National Academy of Sciences, designed by the late Bertram G. Goodhue. The program prepared by Dean Everett V. Meeks of the Yale University School of Fine Arts, provides for a structure of white marble, to conform to the building material of its neighbors.

• A constructive activity has been proposed by the New York Chapter of the A.I.A. looking toward the solution of the single-family, low-cost housing problem. A "study-competition" has been announced to develop designs, including construction methods and materials, which will make possible the construction of houses costing from $3,000 to $5,000. Chapter officials hope to establish that good, substantial houses of this type can be built and that they can form a part of the architect's practice. The competition, which carries no awards, closes May 1st.

• Best Bros. Keene's Cement Company, after nearly fifty years in Medicine Lodge, Kansas, have removed their general offices to Chicago. All correspondence should be addressed to the firm at the Chicago Daily News Building, 400 West Madison Street.

• From *The Master Builder*: "The R. I. B. A. announces that, with the King's approval, it has awarded the Royal Gold Medal to Wilhelm Marinus Dudok, Honorary Corresponding Member, R. I. B. A. (Holland) in recognition of the merit of his work as an architect."

The **QUESTION** for you to decide



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Which method of Home Insulation is more effective?

"A" pictures the ordinary 3⅝in.ho!-low studding space with absolutely no insulative value. "B" shows that ½ in. or 1 in. board type is inadequate insulation. "C" demonstrates how the application of perfect-fitting, wall-thick Bats repel both heat and cold.

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Capitol Rock Wool can be applied as readily to existing construction. Contractors are available in all cities, licensed to install Capitol Rock Wool Blowing Fibre by our patented pneumatic process.

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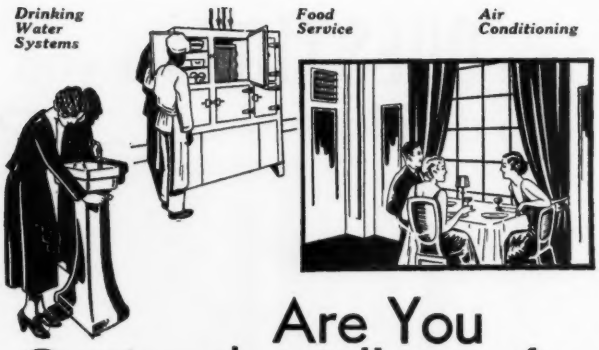

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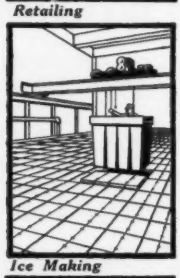
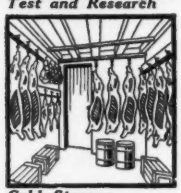
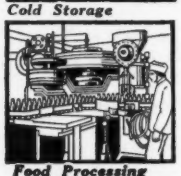

Ice Making

Test and Research


Cold Storage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- Making block ice, ice cubes, ice chips or dry ice
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Let the nearest Frick man aid you in adapting Refrigeration, the New Tool of Industry and Business, to your particular problems. No obligation; but write, wire or phone NOW.

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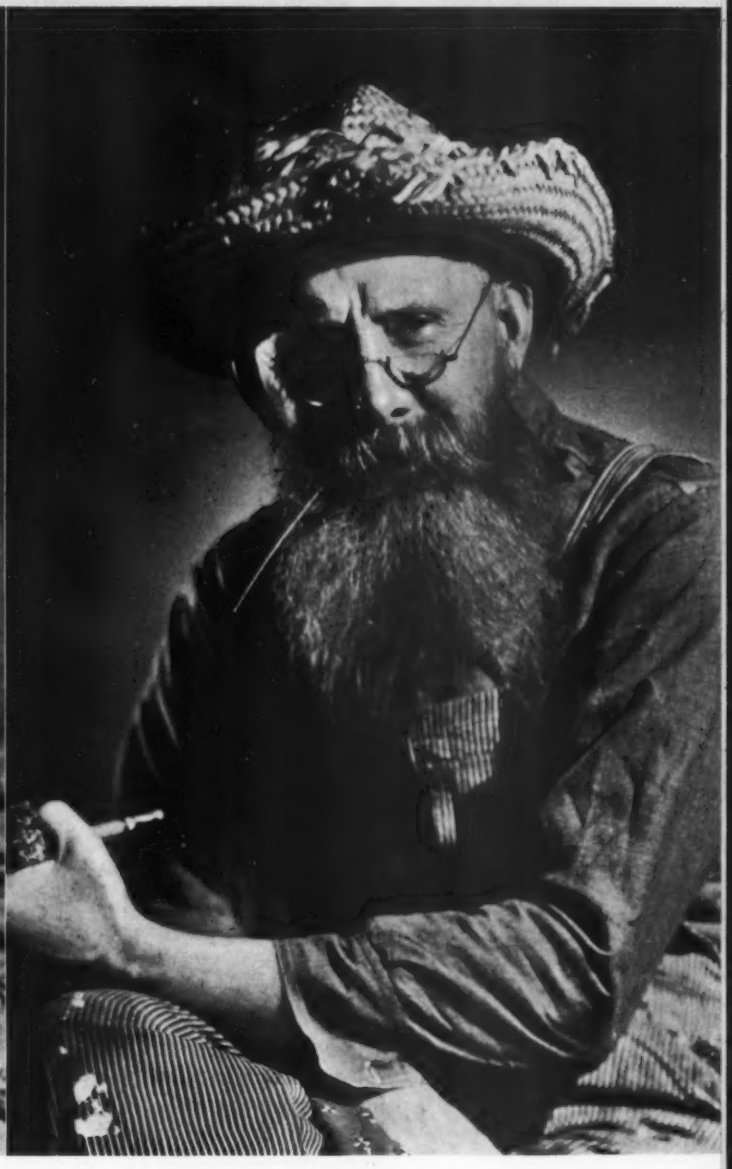
Even the PHOTOGRAPHER *was stumped*

Even the photographer was stumped! John Paul Pennybaker, of Underwood & Underwood Illustration Studios, took these two photographs . . . one THROUGH a piece of L·O·F Quality Window Glass, and the other with NOTHING between the camera and the subject. When a proof of this page was shown to him EVEN HE COULDN'T TELL WHICH WAS WHICH.



● When the keenly critical eye of a camera fails to pick the slightest indication of distortion through a piece of window glass, that is surely obvious indication of extreme clearness and flatness. No technical test, to be sure, but a very practical demonstration of quality . . . evidence enough to explain why so many leading architects write a closed specification for it. To protect the architect, the client and the Libbey·Owens·Ford standard of quality, each light of L·O·F Quality Window Glass is plainly labeled. It is advisable to instruct contractors to leave the labels on.

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SECTION 14, CATALOG 26

MILCOR Steel Roof Deck
SECTION 3, CATALOG 69

MILCOR Super Extruded Aluminum Skylights
SECTION 9, CATALOG 6

MILCOR Ventilators
SECTION 9, CATALOG 23

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Canton, Ohio Chicago, Illinois Kansas City, Missouri La Crosse, Wisconsin

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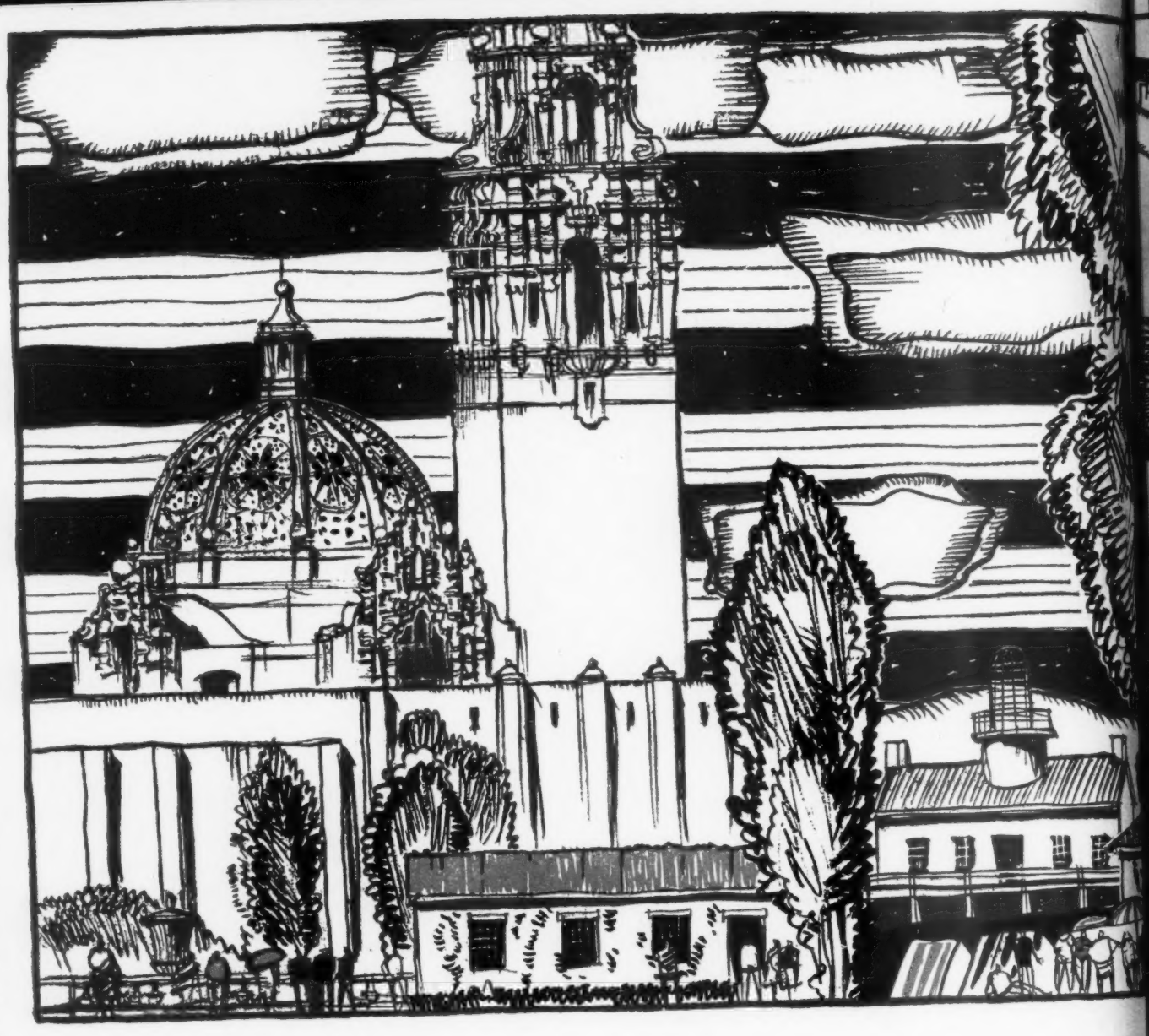

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